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Olympus Environmental Science and
The Piegan-Gloster millsite reclamation project, Lewis and

FINAL REPORT

THE PIEGAN - GLOSTER MILLSITE RECLAMATION PROJECT

Lewis and Clark County, Montana

MDEQ/MWCB 95-002

Prepared For:

Mr. Vic Andersen and Mr. Joel Chavez
Montana Department of Environmental Quality
Remediation Division
Mine Waste Cleanup Bureau
2209 Phoenix Avenue
P.O. Box 200901
Helena, Montana 59620

Prepared By:

Olympus Environmental Science and Engineering, Inc.
765 Colleen
Helena, Montana 59601

February 19, 1997

Olympus Work Order No. 95-5760-9

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1.0 INTRODUCTION

1.1 PROJECT DESCRIPTION

The Piegan-Gloster Millsite Reclamation Project consisted of providing all labor, materials, earthwork, and incidentals necessary to construct temporary stream diversions and runon control ditches, excavate and remove mine tailings contained in the active stream drainage in the vicinity of tailings piles TP-2 and TP-4, relocate the tailings on areas of the tailings piles away from the stream, reconstruct the stream channels, grade and recontour the tailings, apply cover soil, revegetate tailings and excavated areas, and construct a fence around the tailings reclamation areas.

The Invitation for Bid and the original contract encompassed the reclamation of tailings piles TP-2 and TP-4; however, funding became available to reclaim of tailings pile TP-3, which was added to the contract via a change order.

1.2 LOCATION AND ACCESS

The project site is located in the Piegan Creek drainage area, approximately 2.5 miles northwest of Marysville, Montana. The site is accessed by traveling from Helena, Montana approximately seven miles north on Interstate 15, then 14 miles west on Lincoln Road (State Highway 279) to Canyon Creek; then proceed on County Route 707 for approximately four miles to the unimproved road up Piegan Creek. This road is accessed through the gate in the barbed-wire fenceline.

1.3 LAND OWNERSHIP

The Piegan-Gloster Millsite is located partially on private land and partially on public land. The public land is administered by:

U.S. Department of Interior
Bureau of Land Management (BLM)
Butte District Office
106 N. Parkmont
P.O. Box 3388
Butte, MT 59702

The private land is owned by:

LRG Enterprises, Inc.
Canyon Creek, MT 59633

1.4 HISTORY

The Piegan-Gloster mines are located in the Marysville mining district which historically produced gold and silver from placers and epithermal quartz and carbonate veins hosted in igneous and/or metamorphic rocks. The earliest recorded mineral claims were in the mid-1870's and mining activity in the district generally peaked in the late 1880's to early 1890's. During the early 1900's, production was limited to a small number of mines in the district. Some exploration and development activity occurred at the Bald Mountain and Drumlummon mines in the early to mid 1980's when gold prices increased.

From about 1880 to 1890 the Gloster mine was owned and operated by the Boston and Montana Company. The mine was developed by a 200 foot shaft. Gold was mined from a 10-foot wide vein and was processed in a 10-stamp mill located at the mine. In 1882 the mill was expanded to 20-stamps and a new 60-stamp mill was erected.

From 1888 to 1900, both Piegan and Gloster mines were nearly closed in litigation. In 1906, the two mines were consolidated into one operation. The mine was developed by two adits on the Piegan claim. Shortly thereafter the mine closed again. It was purchased by the Barnes-King Development Company in 1911. At the time the property included 34 claims on 391 acres. In 1915, the Barnes-King Development Company also took over operations of the Shannon mine located in the S½, Section 3, Township 11 North and Range 6 West. A 2.5-mile aerial tramway was constructed to haul ore from the Shannon mine to the Gloster mill. The aerial tramway operated on a gravity system in which descending buckets full of ore from the mine would haul the empty buckets from the mill back to the mine. In 1920, the Piegan-Gloster properties ran out of ore despite considerable exploration for additional reserves. The Shannon properties continued heavy production to 1923. The development proved disappointing and the mine was closed on December 5, 1923.

1.5 PROJECT OBJECTIVES

The primary objective of the Piegan-Gloster Millsite Reclamation Project was to protect human health and the environment in accordance with the guidelines set forth by the NCP. Specifically, the remedy was selected to limit human and environmental exposure to the contaminants of concern and reduce the mobility of those contaminants to minimize impacts to the surface water and ground water resources.

2.0 RESPONSIBLE PARTIES

2.1 MDEQ/MWCB COORDINATION

The Montana Department of Environmental Quality/Mine Waste Cleanup Bureau (MDEQ/MWCB) Project Manager for the Piegan-Gloster Millsite Reclamation Project was Joel Chavez. His address is:

Montana Department of Environmental Quality
Remediation Division
Mine Waste Cleanup Bureau
2209 Phoenix Avenue
Helena, Montana 59620
406-444-5440

2.2 BLM COORDINATION, BUTTE DISTRICT OFFICE

The BLM Project Manager was Mike Browne. His address is:

U.S. Department of Interior, Bureau of Land Management
Butte District Office
106 N. Parkmont
P.O. Box 3388
Butte, Montana 59702
406-494-5059

2.3 RECLAMATION AND ENGINEERING PLAN

Olympus Environmental Science and Engineering, Inc. (Olympus) was assigned the responsibility of engineering and preparing the reclamation specifications prior to contractor selection. Curt Serviss was the Olympus Project Manager. The address of Olympus is:

Olympus Environmental Science and Engineering, Inc.
765 Colleen
Helena, Montana 59601
406-443-3087

2.4 QUALITY CONTROL INSPECTION

Olympus was responsible for construction engineering and quality control inspection. Kevin Rauch, P.E. performed the project engineering functions. Kevin Rauch and Dustin Wasley were the primary construction inspectors.

2.5 CONTRACTOR

The successful low bidder for the project was M.K. Weeden Construction, Inc. (MKW) of Lewistown, Montana. The address of MKW is:

M.K. Weeden Construction, Inc.
Hwy 87 West
P.O. Box 1164
Lewistown, Montana 59457
406-538-3726

3.0 CHRONOLOGICAL LISTING OF EVENTS

3.1 PRE-BID CONFERENCE

The Piegan-Gloster Millsite Reclamation Project Pre-Bid Conference was held on July 3, 1996, at 9:00 a.m. at the site. The conference was attended by representatives from MDEQ/MWCB, Olympus, BLM, and 18 potential contractors. Meeting minutes and the attendance sign-in sheet for this conference are presented in Appendix A of this report.

3.2 BID DATE

The bid opening for the reclamation of tailings piles TP-2 and TP-4 was held on July 11, 1996, at 3:00 p.m. at the MDEQ/MWCB office at 1520 E. Sixth Avenue in Helena, Montana.

3.3 LOWEST BIDS

Nine (9) qualified bidders responded with bids ranging from $288,510 to $744,450. The Engineer's estimate was $633,347.50. The bid tabulations are presented in Appendix B. The bids are summarized in Table 1.

3.4 CONTRACT AWARD

The contract for reclamation of TP-2 and TP-4 was awarded to M.K. Weeden Construction, Inc., who was the low bidder. The prime contractor's address is shown under Section 2.1. Two MKW Subcontractors were used for the project. L & H Construction of Lewistown, Montana constructed the fencing and Rick Dean completed the drill seeding and straw mulching. The Notice of Award is included in Appendix C.

3.5 CONTRACT AGREEMENT

The Contract Agreement was signed on August 5, 1996. The Notice to Proceed was issued for a start-up date no later than August 7, 1996. The contractor was to complete the specified work within ninety (90) consecutive calendar days for an anticipated completion date of November 14, 1996. A change order was issued during the construction period extending the time to December 14, 1996. The Notice to Proceed is included in Appendix C.

3.6 CONSTRUCTION START-UP

The Pre-Construction Meeting was held on August 5, 1996, at 2:00 p.m. at the Piegan-Gloster Millsite. Joel Chavez (MDEQ/MWCB) and Kevin Rauch (Olympus) lead the meeting. Additional attendees included Dustin Wasley (Olympus) and Monte Weeden (MKW).

The general scope of work was discussed to make sure that all parties had the same understanding of the project. Submittals, including the construction schedule and traffic control

TABLE 1. BID SUMMARY FOR RECLAMATION OF TP-2 AND TP-4.

BID ITEM	M.K. Weeden	High Mountain	Hydrometrics, Inc.	Ajax Contracting	Envirocon, Inc.	Donnes, Inc.	Shumaker Trucking	Smith Contracting	Environmental Reclamation NW
Mob, Bonding, Insurance	$34,949.00	$15,000	$25,750.00	$35,000.00	$52,500.00	$51,350.00	$50,000.00	$31,500.00	$99,974.00
Road Improvements/Construction	$2,538.00	$4,982.00	$20,680.00	$32,900.00	$26,320.00	$4,700.00	$3,290.00	$28,200.00	$25,850.00
Clearing & Grubbing	$2,700.00	$2,000.00	$855.00	$2,500.00	$46,000.00	$10,000.00	$7,500.00	$7,500.00	$35,250.00
Mill Timber Removal/Salvage	$3,150.00	$2,500.00	$1,140.00	$10,000.00	$1,670.00	$2,500.00	$5,000.00	$4,500.00	$2,500.00
Temporary Stream Diversion	$4,245.00	$7,460.00	$6,650.00	$25,000.00	$9,680.00	$2,000.00	$10,000.00	$10,500.00	$9,850.00
Runon Control Ditch Construction	$1,536.00	$9,600.00	$2,432.00	$8,000.00	$12,000.00	$8,000.00	$4,800.00	$4,400.00	$13,600.00
Excavate Mine Waste, Haul, Place	$73,200.00	$80,032.00	$81,984.00	$97,600.00	$73,200.00	$146,400.00	$126,880.00	$146,400.00	$146,400.00
Reconstruct Stream Channel									
Backfill and Compact	$67,000.00	$67,000.00	$64,990.00	$26,130.00	$68,340.00	$120,600.00	$61,640.00	$80,400.00	$204,216.00
Filter Fabric	$9,000.00	$7,500.00	$9,750.00	$10,000.00	$13,500.00	$10,000.00	$10,000.00	$7,500.00	$12,500.00
Type 1 Riprap	$9,255.60	$8,100.00	$17,955.00	$13,500.00	$9,612.00	$16,200.00	$13,500.00	$14,850.00	$8,640.00
Type 2 Riprap	$18,168.40	$15,900.00	$21,253.00	$21,200.00	$16,536.00	$31,800.00	$26,500.00	$28,620.00	$14,840.00
Mine Waste Grading	$5,368.00	$48,800.00	$15,616.00	$24,400.00	$32,696.00	$24,400.00	$73,200.00	$61,000.00	$34,160.00
Cover Soil Application	$37,800.00	$54,000.00	$64,125.00	$47,250.00	$62,100.00	$67,500.00	$62,100.00	$81,000.00	$89,910.00
Fertilize and Seed	$4,725.00	$7,875.00	$6,772.50	$10,500.00	$7,035.00	$5,250.00	$5,250.00	$11,550.00	$6,300.00
Mulch	$4,725.00	$12,600.00	$7,980.00	$10,500.00	$14,070.00	$5,250.00	$7,875.00	$15,750.00	$12,600.00
Install Erosion Control Mat	$1,150.00	$3,300.50	$2,185.00	$1,840.00	$5,577.50	$5,750.00	$5,750.00	$14,375.00	$5,060.00
Construct Fences	$3,450.00	$8,490.00	$10,950.00	$6,000.00	$10,800.00	$6,000.00	$9,000.00	$4,500.00	$9,750.00
Obliterate and Reclaim Temp. Road	$3,000.00	$2,250.00	$2,850.00	$4,500.00	$8,400.00	$900.00	$750.00	$6,750.00	$7,500.00
Obtain MPDES Storm Water Permit									
Discharge Permit	$650.00	$650.00	$650.00	$650.00	$650.00	$650.00	$650.00	$650.00	$650.00
Straw Bales	$900.00	$500.00	$600.00	$1,000.00	$450.00	$1,000.00	$1,000.00	$1,050.00	$400.00
Silt Fence	$1,000.00	$1,500.00	$1,450.00	$5000.00	$4,800.00	$3,000.00	$6,000.00	$2,750.00	$4,500.00
TOTAL	$288,510.00	$360,039.50	$366,617.50	$393,470.00	$475,936.50	$523,250.00	$490,685.00	$563,745.00	$744,450.00

plan, were discussed. Health and safety were discussed, and the contractor indicated that he had prepared a Health and Safety plan. MKW indicated that they planned on working 10 to 12 hour days, Monday through Thursday. If weather became a problem, they would possibly work Fridays and Saturdays to accelerate the schedule. Joel Chavez informed Olympus and MKW that work could not start on TP-4 because it is primarily BLM land, and BLM was still in a public comment period until the middle of August. The parties agreed to start work on TP-2 and begin work on TP-4 after authorization was given by BLM and MDEQ/MWCB.

3.7 CHANGE ORDERS

Four change orders were written for this project. Copies of the change orders are presented in Appendix D of this report. Change Order No. 1 increased the contract amount by $18,176.00 with no change in the contract date. The purpose of Change Order No. 1 was to obtain additional riprap from a source approximately 0.7 miles south of tailings pile TP-2. The original riprap source located adjacent to TP-2 did not yield the quantity of riprap that was anticipated.

Change Order No. 2 increased the contract amount by $325,789.50 and extended the contract completion date by 30 days to December 14, 1996. The purpose of Change Order No. 2 was to add reclamation of tailings pile TP-3 to the contract.

Change Order No. 3 decreased the contract amount by $3,750.00 with no change in the contract completion date. The purpose of Change Order No. 3 was to allow MKW to purchase the 1,000 feet of pipe used in the temporary stream diversion around tailings pile TP-3.

Change Order No. 4 increased the contract price by $8,307.50 with no change in the contract completion date. The purpose of Change Order No. 4 was to adjust for minor changes in actual quantity bid items (fencing, fertilizing, seeding, mulching, silt fence and straw bales), and to increase the unit cost for fencing completed in an area with shallow bedrock.

3.8 WORK STOPPAGES

No work stoppages occurred on this project.

3.9 REQUESTS FOR PAYMENT

Three (3) payment requests were made during this project. Payment Request No. 1 was for the period of August 5 through August 29, 1996, and the amount earned, less taxes and retainage was $173,616.40.

Payment Request No. 2 was for the period of August 30 to October 23, 1996. The amount earned, less taxes and retainage and previous payments, was $407,151.29, which included a refund of the 10 percent retainage from tailings piles TP-2 and TP-4, which had been satisfactorily completed.

Payment Request No. 3 was for the period of October 24 to October 29, 1996. The amount earned, less taxes and previous payments, was $55,702.36. Copies of the Payment Request forms are presented in Appendix E of this report.

3.10 SUBSTANTIAL COMPLETION

The date of Substantial Completion was October 29, 1996.

3.11 FINAL COMPLETION AND APPROVAL

A final field inspection was conducted by Kevin Rauch and Dustin Wasley of Olympus on October 29, 1996. The final completion date is one year from the Substantial completion date or October 29, 1997. Copies of the Affidavit on Behalf of the Contractor, the Contractor's Certificate of Completion, the Consent of Surety to Final Payment, the Certificate of Substantial Completion, and the Certificate of Acceptance are presented in Appendix F.

3.12 FINAL PAYMENT

The final payment of $55,702.39 was approved by MDEQ/MWCB on November 25, 1996. A copy of the final payment request form (Payment Request No. 3) is included in Appendix E.

4.0 CONSTRUCTION

4.1 DESCRIPTION OF THE PROJECT PLAN

The work consisted of providing all labor, materials, earthwork, and incidentals necessary to improve existing access roads; construct short access roads; harvest timber from tailings areas; clearing and grubbing; removing and burying timbers from the remains of the Piegan-Gloster mill building; installing temporary stream diversions; construction of runon control ditches; excavating and removing tailings from three tailings piles in the active stream drainage; reconstructing approximately 2,200 feet of stream channel though the three tailings piles; grading and recontouring the excavated tailings; applying cover soil to the graded tailings; revegetation of disturbed areas, including fertilizing, seeding and mulching; construction of 4-strand barbed-wire fence around the perimeter of revegetated areas; and providing controls for storm water and erosion controls during construction.

The purpose of this reclamation project was to limit human and environmental exposure to the contaminants-of-concern and reduce the mobility of these contaminants to minimize impacts to the local surface water and ground water resources. The reclamation plan involved removing those waste sources at the Piegan-Gloster Millsite which were the principal sources of concern (the tailings in the active stream drainage) and reconstructing the stream channels to protect and contain these wastes in place. The total surface area of the three tailings piles was approximately 11.2 acres prior to reclamation. Approximately 1.2 acres of timber were removed from the tailings piles to accommodate construction activities. Additional clearing and grubbing was required throughout most of the tailings area.

The excavated tailings areas were backfilled and compacted to achieve the specified grade for reconstruction of the stream channels. Soil from road construction activities adjacent to TP-2 and TP-3 were used as the backfill sources. The stream channels through TP-2, TP-3, and TP-4 were shaped, graded and lined with riprap to provide long-term stabilization of the tailings contained in place. Drop structures were constructed in the stream channels through tailings piles TP-3 and TP-4 to dissipate energy. Disturbed areas were revegetated with a reclamation seed mix, fertilized, and mulched by hydroseeding methods on steep slopes and drill seeding/straw mulching on flatter slopes.

Ditches were constructed to divert surface water runon away from the reclaimed areas. Four-strand barbed-wire fence was constructed around the reclaimed sources to allow for the establishment of vegetation without the interference from livestock. Portions of the roads constructed or improved at the site were obliterated and reclaimed immediately after the reclamation activities were completed; however the main road up Piegan Creek was left intact to allow continued use by the land owner, and to allow access for monitoring the progress and maintenance of the reclaimed areas.

4.2 MAJOR EQUIPMENT LIST

The major equipment used on the Piegan-Gloster Millsite Reclamation Project is listed in Table 2.

TABLE 2. MAJOR EQUIPMENT LIST.

TYPE	MAKE/MODEL	HORSEPOWER	CAPACITY
Excavator with thumb	Komatsu PC 300	220	2.5 c.y.
Excavator	Hitachi EX 300		2.5 c.y.
Bulldozer	Caterpillar D7	200	
Scraper	Caterpillar 627	450	20 c.y.
Scraper	Caterpillar 627	450	20 c.y.
Scraper	Caterpillar 627	450	20 c.y.
Water Truck	Peterbilt	350	4,000 gallon
Motor Grader	Caterpillar 14G	180	
Shop Truck	Ford F350		
Articulating Rock Truck	Terex 2566	240	25 ton
Articulating Rock Truck	Terex 2566	240	25 ton
Hydroseeder	Finn		
Drill Seeder			
Straw Mulcher	Haybuster		
Crimper			

4.3 CONTRACTOR EMPLOYEES

A total of 13 different contractor employees worked on the Piegan-Gloster Millsite Reclamation Project. These employees included eight employees of MKW, and five employees from two subcontractors. The typical daily crew consisted of the MKW owner/foreman/equipment operator and three to five additional equipment operators. These four to six employees operated the excavators, bulldozer, scrapers, articulating rock trucks, water truck, motor grader, and hydroseeder, and served as laborers as needed.

The only subcontractors on the project were the fencing and drill seeding contractors. The fencing contractor had four employees and a skid-steer loader with an auger attachment. The drill seeding contractor had one employee and supplied a tractor and drill seeder. The subcontractors spent a limited amount of time on site (a week or less).

4.4 CONSTRUCTION ACTIVITIES

Construction activities began on August 5, 1996, immediately after the pre-construction meeting (see Section 3.6). A summary of daily activities are as follows:

August 5, 1996 - M.K. Weeden began work on improving the access road to the site. A Komatsu excavator, Caterpillar scraper, and Caterpillar D7 bulldozer were mobilized to the site. An equipment staging area was set up and an above-ground fuel tank was set in a plastic-lined bermed area. Tree felling began in areas away from the power line. The power line was scheduled to be shut down on August 6, 1996. The excavator followed the felling activities and decked the marketable trees and windrowed the slash along the road fill slope. The bulldozer cleared trees on TP-2.

August 6, 1996 - Olympus confirmed with Montana Power Company (MPC) that the power line was shut down. Olympus informed MKW that the power was shut down and they started clearing trees along the remainder of the road. A top snapped out of a tree and grazed the power line. Olympus reported the incident to MPC and requested that they check the line before power is restored. The scraper and bulldozer began working on sloping back the TP-2 dam face. Olympus staked the limits of tailings removal on the TP-2 dam face and channel.

August 7-8, 1996 - Work continued on the road improvements. Piegan Creek was diverted from where it was running down the road (in the bog area between TP-2 and TP-3) back into its natural channel. The road was built up several feet with fill in the bog area to make it passable. The scraper worked on removing tailings from the TP-2 main channel and placing them on the west side of TP-2. Olympus and MKW staked out the alignment for the TP-4 stream diversion. Approval had been given to start work on TP-4 at the start of the next week. The MKW crew left the site at approximately 3:30 p.m. on August 8 for the weekend.

August 9, 1996 - Olympus staked the limits of tailings removal for the TP-4 dam and channel. The cut on the dam face was staked so that trees growing at the base of the dam and on the lower portion of the dam face could be preserved for aesthetics and to provide stability. MKW had indicated that they could work around the trees to preserve them.

August 12-13, 1996 - A second Caterpillar scraper was mobilized to the site. Removal of tailings from the TP-2 main channel and dam face continued. Native material was encountered on the north end of the TP-2 main channel. The tailings in this vicinity were relatively dry, but became increasingly more wet farther south (near the underdrain sinkhole). Tailings in the wet area were removed with the excavator.

August 14, 1996 - Excavation continued on the TP-2 main channel. The excavator slid into a slime pocket at about 9:00 a.m. and sunk in up to the top of the motor housing. The excavator was removed by about 1:00 p.m. and continued working. The scrapers had nearly reached the lower limit of the cut on the TP-2 dam face. A temporary access road was cut across the TP-2 dam face. The excavator exposed the underdrain in the sinkhole area. This work revealed that about 20 feet of the ceramic underdrain pipe was crushed. The underdrain was patched by placing riprap surrounded by filter fabric in the area where the pipe was crushed. A large amount of riprap was placed around the crushed pipe to allow the stream to flow through it. The area was covered with a plastic liner to inhibit vertical migration of water from the surface from entering the underdrain after reclamation.

August 15, 1996 - Tailings removal continued in the TP-2 main channel. The channel was nearly completed to the south end. The area where the channel intersects the underdrain was left so that the underdrain would not be disturbed. The bulldozer began clearing on the surface of TP-4. Clearing was completed and construction of an access road up the TP-4 dam face was started. Tailings were pushed out over the east side of the dam face to reduce the slope and provide additional tailings storage volume. Some large rock (2-ft diameter and larger) was encountered on the east side of the TP-4 dam during construction of the road. This rock was deemed suitable for use in the TP-4 drop structures. The ditch for the temporary stream diversion on TP-4 was excavated. The MKW crew left the site for the weekend.

August 16, 1996 - Olympus surveyed grades on the TP-2 main channel and calculated the cut/fill to bring the channel to grade.

August 19, 1996 - A second (Hitachi) excavator was mobilized to the site. The Hitachi excavator worked on sloping back the center portion of the TP-4 dam. These tailings were slung to the bulldozer, which pushed them out over the dam face to achieve a 3:1 slope or better. The Komatsu excavator cleared additional brush from the base of TP-4. Both scrapers were cutting tailings from the west side of the erosion channel through TP-4. These tailings were hauled down in front of the TP-4 dam, up the dam face, and placed on top of TP-4 on the east side. A crew from MPC checked the power line prior to restoring power.

August 20, 1996 - The two excavators built a road to the talus slope riprap source above the road cut slope adjacent to TP-2. The scrapers continued removing tailings from the west side of TP-4 and placing them on the east side of the main pile. The tailings became too wet for scrapers so the excavators were used to remove tailings from the bottom of the erosion cut. Problems were incurred with wet tailings sliding back into the bottom of the excavation. A pile of wet tailings removed from the erosion cut slid from the slope of TP-4 back into the channel bottom along the lower third of the channel.

August 21, 1996 - The MKW crew worked with two excavators and the bulldozer to remove the wet tailings from TP-4 that had slid back into the channel bottom. The tailings were moved to the top of TP-4 where they were spread out to dry. Scrapers placed backfill in the excavated channel to bring the bottom up to grade and to stabilize tailings slope from sliding.

August 22, 1996 - Work commenced on the channel between TP-2 and TP-4. A previously undiscovered pipe, suspected to be an underdrain through TP-4, was intersected near the toe of the TP-4 dam while excavating tailings from channel. Exploratory digging at the upper end of TP-4 found the upper end of the underdrain pipe, which was buried. Water drained from the pipe, but stopped after about two hours. The channel was excavated down to native soil, and backfill was placed and compacted by scrapers. MKW crew left the site for the weekend.

August 23, 1996 - Olympus surveyed the TP-4 channel subgrade and checked the area where the TP-4 underdrain was found. The area was dry and apparently no longer draining.

August 26, 1996 - Work continued on the channel between TP-2 and TP-4. Marketable timber that was decked at the site was hauled off. Olympus, MKW, and Joel Chavez (MDEQ/MWCB) met at the site to look at the scope of work and design drawings for developing a change order for TP-3. The rock source by TP-2 was not producing the quantity of riprap that was expected. Olympus and MKW scoped out an alternative riprap source (talus slope) above the mill.

August 27, 1996 - Work continued on the channel between TP-2 and TP-4. Tailings were excavated around the underdrain pipe where the channel crosses the underdrain. Olympus surveyed grade on TP-4 and the channel between TP-2 and TP-4. The mill timbers were removed and buried in the flat below the mill.

August 28, 1996 - The two excavators were used to dress up the road slopes between TP-2 and TP-3. Scrapers were used to build up the TP-2 channel banks with backfill material. Final grading of the tailings adjacent to the channel banks was completed. Joel Chavez visited site to check the progress. A change order to haul riprap from an alternate source above the mill was discussed. Permission had been granted by the land owner to use this source.

August 29, 1996 - Kevin Rauch (Olympus) and Monte Weeden (MKW) met with Joel Chavez at the MDEQ/MWCB office to finalize the change order price for riprap and change order for TP-3. MKW finished grading tailings on TP-2 and TP-4, and left the site at noon for the weekend.

September 3, 1996 - A third scraper and a water truck were mobilized to the site. Traffic control was put in place and the three scrapers began hauling cover soil from the placer tailing borrow source area. Some settlement was observed where the underdrain sinkhole was backfilled, and the discharge from the underdrain was murky. The plan had been to haul all of the cover soil and then finish channels, but the priority was changed to start placing riprap and complete channels sooner.

September 4, 1996 - Olympus surveyed the final subgrade for drop structures in TP-4. Discharge from the underdrain pipe was still murky. Two sediment ponds were excavated in the bog area to allow settling of sediments. Hauling and placement of cover soil continued with three scrapers. Clearing began on tailings pile TP-3. An articulating rock truck was mobilized to site and used to haul logs and slash.

September 5, 1996 - Additional subsidence (approximately 1.5 feet) occurred in the area of the backfilled underdrain sinkhole. The subsidence was suspected to be the cause of the murky discharge. Tailings were excavated from the subsidence area to evaluate the problem. Water backed up in excavation as though the underdrain was partially blocked. Periodic surveillance was kept on the excavation. MKW began shaping the TP-4 channel and drop structures and placing riprap. Hauling and placement of cover soil continued with three scrapers.

September 6, 1996 - Olympus checked the subsidence excavation and it contained no visible water. The underdrain discharge was still murky, but better than the day before. Hauling and placement of cover soil continued with two scrapers. Construction continued on the TP-4 channel. Joel Chavez arrived on site at about 10:00 and discovered water rising up in the subsidence excavation. A block of soil apparently sloughed into the subsidence excavation and plugged the underdrain pipe. The rising water level saturated tailings in the excavation area and caused more tailings to slough. There was a concern that tailings would keep saturating and sloughing, causing the tailings pile to fail. Therefore, Piegan Creek was diverted from the underdrain into the TP-2 main channel subgrade. After securing the site, the MKW crew left the site for the weekend.

September 7, 1996 - Joel Chavez (MDEQ/MWCB) checked the site and observed that the water level had receded in the underdrain excavation, and the stream diversion was performing well.

September 9, 1996 - Olympus checked the diversion first thing in the morning and it had meandered toward the dam face and started to erode tailings from the dam face. Equipment was immediately pulled off the channel construction to redivert the stream and make repairs. Riprap was placed to protect and stabilize the area. MKW resumed channel construction on TP-4, and Olympus observed the stream diversion periodically. A second articulating rock truck was mobilized to the site. The two rock trucks hauled riprap from the source above the mill. The Hitachi excavator loaded riprap at the source, while the Komatsu excavator placed riprap. The bulldozer spread out topsoil on TP-4. Leroy Lamach of MPC came to the site to look at moving three power poles out of the path of the stream channel construction.

September 10, 1996 - MKW started construction on the channel between TP-2 and TP-4. Riprap was hauled and stockpiled along the TP-2 channel in preparation for channel construction. Scrapers hauled additional cover soil up to TP-4. The channel between TP-2 and TP-4 was completed to the intersection with the TP-2 main channel.

September 11, 1996 - MKW continued hauling and stockpiling riprap along the bank of the TP-2 channel. MKW found out that pipe that was planned for diverting Piegan Creek down the existing road would not be available for about two weeks. A plan was formulated by Olympus and MKW, with the approval of MDEQ/MWCB, to ditch the road and divert the creek down the road. MKW started construction on the lower end of the TP-2 channel below the dam toe and progressed from Piegan Creek upstream past the TP-2 dam.

September 12, 1996 - Piegan Creek was temporarily diverted from the TP-2 main channel subgrade onto the road, which had been ditched. Filter fabric was placed on the steep outfall at the end of the diversion to provide erosion protection and a settling basin was constructed at the outlet. The ditch grade was 0.3 percent so the flow velocity was slow and sedimentation was minimal. Construction started on the TP-2 main channel just below the uppermost power pole. MKW finished the final grading of the channel and started placing filter fabric.

September 13, 1996 - The remaining filter fabric was placed and MKW started placing riprap in the TP-2 main channel with two excavators. The channel was completed by 1:00 p.m. and temporary diversion was removed, allowing Piegan Creek to flow down the riprap-lined channel. The uppermost 50 feet of channel would be completed after power poles are moved by MPC.

September 16, 1996 - MKW excavated tailings and completed the upper end of the TP-4 channel (about 50 feet) where a temporary haul road had been. The temporary stream diversion past TP-4 was removed and the flow was diverted into the TP-4 channel. Work began on clearing and removing rock suitable for riprap from TP-3 the where temporary stream diversion would be constructed. The rock was stockpiled north of TP-3 adjacent to the road.

September 17, 1996 - The Hitachi excavator and two rock trucks continued clearing and riprap removal from TP-3 diversion area and stockpiling the riprap north of TP-3. The Komatsu excavator dug the remaining runon control ditch for TP-4 and windrowed slash filters on the TP-4 slopes.

September 18, 1996 - Three scrapers began hauling and placing cover soil on TP-2.

September 19, 1996 - Three scrapers continued hauling and placing cover soil on TP-2. Riprap borrowing and stockpiling for the TP-3 channel was completed and the two rock trucks were demobilized from the site.

September 23, 1996 - Three scrapers continued hauling and placing cover soil on TP-2. Olympus dug test pits by hand on TP-4 to check thickness of cover soil. Additional cover soil was required in some areas. Cover soil was being taken from areas along the main access road. Olympus and MDEQ/MWCB observed that the material was becoming increasingly iron oxidized, and directed MKW to cease scraping cover soil from the road and resume borrowing from the placer tailings source. MPC arrived on site and moved the three power poles at TP-2 as requested.

September 24 and 25, 1996 - Three scrapers continued hauling and placing cover soil on TP-2.

September 26, 1996 - Cover soil placement and grading was completed on TP-2. Additional cover soil was hauled to TP-4 to cover thin areas. The road along TP-2 was in-sloped and graded to function as a runon control ditch.

September 30, 1996 - Work continued on the TP-3 temporary stream diversion. The first 400 feet of trench was completed and about 100 feet of 18-inch diversion pile was installed. The bulldozer began sloping back the TP-3 dam face. Loads of hydromulch and straw mulch were delivered to TP-2.

October 1, 1996 - Piegan Creek was temporarily diverted from the TP-2 channel back onto the road to complete the last 50 feet of channel where the power pole was moved. The upper end of the TP-2 underdrain pipe was exposed, plugged with concrete, and backfilled with native material. Piegan Creek was returned to the TP-2 channel. Hydroseeding began on TP-4 and work continued on the TP-3 diversion. The trench was completed and all but 100 feet of pipe was installed. The pipe was tested for leaks with water from the water truck.

October 2, 1996 - The temporary diversion was completed on TP-3, but the stream was not diverted. Two excavators and the bulldozer began removing tailings from the TP-3 stream drainage. Hydroseeding was completed on TP-4.

October 3, 1996 - Tailings removal continued on TP-3. The estimated path of the underdrain was marked with flags, and excavation progressed on the east side of the markers away from underdrain. At about 12:30 p.m., the MKW crew stopped excavating tailings because they did not want to without risking puncturing the underdrain before the stream was diverted. Hydroseeding of the slopes on TP-2 was completed by 1:00 p.m. The MKW crew left the site for the weekend.

October 7, 1996 - Excavation of wet tailings from the TP-3 stream channel continued with two excavators and the bulldozer. The tailings were spread out on the top of TP-3 to dry. At about 2:00 p.m., Piegan Creek was diverted from the TP-3 underdrain into the temporary diversion pipe, and excavation activities continued. Hydroseeding began on the road slopes at TP-2.

October 8 1996 - Excavation and removal of tailings from the TP-3 stream drainage continued down to native soil. Excavation continued to reduce the tailings slope adjacent to the channel. Olympus surveyed the channel subgrade to determine the required cut/fill to achieve the design grade. Hydroseeding continued on road slopes above TP-3.

October 9, 1996 - Two scrapers placed four feet of backfill in the TP-3 stream channel to achieve grade and provide material to build the stream banks. MKW completed grading and shaping the lower 300 feet of channel. The top of TP-2 was drill seeded and straw mulched. Hydroseeding continued on road slopes and areas where cover soil was taken from below TP-3.

October 10 , 1996 - Grading and shaping of the TP-3 channel subgrade was completed from the lower end of TP-3 up to the underdrain inlet. One scraper hauled excess embankment from the TP-3 road cut and placed it on the TP-3 dam face as cover soil. Erosion control mat was installed in the TP-2 and TP-4 runon control ditches.

October 14, 1996 - One rock truck was remobilized to the site to haul stockpiled riprap to the TP-3 channel. The rock truck was used to haul additional backfill to build up the west channel bank and establish a haul road along the channel. Filter fabric was placed in the channel and the Komatsu excavator started placing riprap in the TP-3 channel at about 2:00 p.m. The Hitachi excavator was used to load the stockpiled riprap into the rock truck. One scraper continued to haul cover soil from the road cut to the TP-3 dam face. The upper 285 feet of the TP-3 channel was completed.

October 15, 1996 - Two scrapers hauled cover soil from the TP-3 road cut to the TP-3 dam face. MKW continued placing riprap in the TP-3 channel and reached the downstream end by 3:30 p.m. Olympus placed grade control stakes on the dam face and the bulldozer spread the cover soil over the dam face.

October 16, 1996 - Three scrapers hauled cover soil from the placer tailing borrow source area to TP-3. The TP-3 underdrain inlet was plugged with concrete and backfilled with native material. The last 15 feet of channel past the underdrain was shaped and lined with riprap. Olympus walked the fence route with the fencing contractor and staked the corners of the TP-2/TP-4 fence. Tailings that had been excavated from the TP-3 temporary diversion ditch were graded out onto the tailings pile. Piegan Creek was routed through the TP-3 channel after its completion. The fencing contractor mobilized equipment and supplies to the site.

October 17, 1996 - Three scrapers continued hauling and placing cover soil from the placer tailing borrow area onto TP-3. The temporary diversion pipe was removed and hauled to the staging area. The road along TP-3 was in-sloped and graded to function as a runon control ditch. The fencing contractor continued work on the fence.

October 18, 1996 - Three scrapers finished hauling and placing cover soil on TP-3. MKW started hydroseeding slopes on TP-3. The fencing contractor continued work on the fence.

October 19, 1996 - MKW finished hydroseeding the road slopes and the slopes on TP-3, and demobilized hydroseeder and Hitachi excavator. All work was completed except for the fencing and clean up work.

October 21, 1996 - The fencing contractor continued work on the fence.

October 22, 1996 - MKW demobilized three scrapers, the above-ground fuel tank, and a portion of the diversion pipe. The top of TP-3 and the staging area were drill seeded and straw mulched. The placer tailing borrow area was seeded with Timothy seed, rather than the reclamation seed mix, at the request of the land owner and with the approval of MDEQ. The fencing contractor continued work on the fence.

October 23, 1996 - MKW demobilized the motor grader, mulcher, crimper, and the remaining diversion pipe. Debris and trash from the staging area were loaded up and hauled off, and the stream crossing at TP-3 was removed. The fencing contractor continued work on the fence.

October 24, 1996 - MKW demobilized the Komatsu excavator. The fencing contractor continued work on the fence.

October 25, 1996 - The fencing contractor continued work on the fence.

October 26, 1996 - The fencing contractor finished the fencing, including restoring the gates that were removed by the county road, the placer tailings borrow source, and by TP-3.

October 29, 1996 - Kevin Rauch and Dustin Wasley of Olympus measured the final quantity of fence, the revegetation areas below TP-3, and did a final inspection of the fence and revegetation areas. The project was declared substantially complete.

4.5 QUANTITIES USED

Work items were bid on lump sum, design quantity, and unit price bases. Tables 3 and 4 provide lists of each item, the unit of measurement, and the estimated versus actual quantity for TP-2/TP-4 and TP-3, respectively. Design quantities were generally field-verified as being within the contact range. Verification methods included surveying and load counts. No disputes were formally raised by the contractor.

5.0 PROJECT COSTS

5.1 PAY REQUESTS

Three pay requests were processed for this project as discussed in Section 3.9. Copies of the pay requests are included in Appendix E.

TABLE 3. QUANTITIES SUMMARY FOR TP-2 AND TP-4.

ITEM NO.	ESTIMATED QUANTITY	ACTUAL QUANTITY	UNIT	DESCRIPTION
1	1	1	Lump Sum	MOBILIZATION, BONDING, AND INSURANCE
2	9,400	9,400	Lineal Feet	ROAD IMPROVEMENTS/ROAD CONSTRUCTION
3	1	1	Lump Sum	CLEARING & GRUBBING INCLUDING TIMBER HARVEST
4	1	1	Lump Sum	MILL TIMBER REMOVAL/SALVAGE
5	1	1	Lump Sum	TEMPORARY STREAM DIVERSION
6	1,600	1,600	Lineal Feet	RUNON CONTROL DITCH CONSTRUCTION
7	48,800	48,800	Cubic Yards (D.Q.)	EXCAVATE MINE WASTES, HAUL, AND PLACE
8				RECONSTRUCT STREAM CHANNEL
	13,400	13,400	Cubic Yards (D.Q.)	Backfill and Compact
	5,000	5,000	Square Yards	Filter Fabric
	540	540	Cubic Yards (D.Q.)	Type 1 Riprap
	1,060	1,060	Cubic Yards (D.Q.)	Type 3 Riprap
9	48,800	48,800	Cubic Yards (D.Q.)	MINE WASTE GRADING
10	13,500	13,500	Cubic Yards (D.Q.)	COVER SOIL APPLICATION TO GRADED MINE TAILINGS
11	10.5	12.5	Acre	FERTILIZE AND SEED
12	10.5	9.5	Acre	MULCH
13	1,150	1,150	Square Yards	INSTALL EROSION CONTROL MAT
14	3,000	3,000	Lineal Feet	CONSTRUCT FENCES
15	3,000	3,000	Lineal Feet	OBLITERATE AND RECLAIM TEMPORARY ROADWAYS
16				OBTAIN MPDES STORM WATER PERMIT
	1	1	Lump Sum	Discharge Permit
	100	0	Each	Straw Bales
	1000	0	Lineal Feet	Silt Fence

TABLE 4. QUANTITIES SUMMARY FOR TP-3.

ITEM NO.	ESTIMATED QUANTITY	ACTUAL QUANTITY	UNIT	DESCRIPTION
3	1	1	Lump Sum	CLEARING AND GRUBBING INCLUDING TIMBER HARVEST
5	1	1	Lump Sum	TEMPORARY STREAM DIVERSION
6	800	800	Lineal Feet	RUNON CONTROL DITCH CONSTRUCTION
7	21,000	21,000	Cubic Yards (D.Q.)	EXCAVATE MINE WASTES, HAUL, AND PLACE
8				RECONSTRUCT STREAM CHANNEL
	4,100	4,100	Cubic Yards (D.Q.)	Backfill and Compact
	2,550	2,550	Square Yards	Filter Fabric
	350	350	Cubic Yards (D.Q.)	Type 1 Riprap
	500	500	Cubic Yards (D.Q.)	Type 3 Riprap
	1	1	Lump Sum	Plug TP-3 Underdrain
9	21,000	21,000	Cubic Yards (D.Q.)	MINE WASTE GRADING
10	8,600	8,600	Cubic Yards (D.Q.)	COVER SOIL APPLICATION TO GRADED MINE TAILINGS
11	7.4	15.6	Acre	FERTILIZE AND SEED
12	7.4	13.4	Acre	MULCH
13	580	580	Square Yards	INSTALL EROSION CONTROL MAT
14	1,850	6,800	Lineal Feet	CONSTRUCT FENCES
15	6,500	6,500	Lineal Feet	OBLITERATE AND RECLAIM TEMPORARY ROADWAYS

5.2 TOTAL PROJECT COSTS

The total construction cost for this project was $637,033.00. MKW was awarded the contract and received $637,033.00. The original bid was $288,510.00, with four change orders issued for $18,176.00, $325,789.50, ($3,750.00), and $8,307.50 as described in Section 3.7. Table 5 presents a summary of the project line item costs and the percent of the total cost for TP-2/TP-4 and TP-3, respectively. Table 6 presents the construction cost breakdown for the whole project. As shown in Table 6, the major cost items were excavation of mine wastes, temporary diversions, stream channel backfill, and haulage and placement of cover soil, which accounted for 65 percent of the total construction cost.

The total engineering cost for this project was $201,956.50. These costs are presented in Table 7. An analysis of the engineering costs versus the construction costs is presented in Appendix G. The total project cost was $838,989.50.

TABLE 5. SUMMARY OF PROJECT CONSTRUCTION COSTS.

Item No.	Description	Actual Quantity	Unit Rate	Actual Cost	Percent of Actual Cost
	TP-2/TP-4				
1	Mob, Bond, Insurance	1	$34,949.00	$34,949.00	5.5%
2	Road Improvements	9400	$0.27	$2,538.00	0.4%
3	Clear & Grub	1	$2,700.00	$2,700.00	0.4%
4	Mill Removal	1	$3,150.00	$3,150.00	0.5%
5	Temporary Stream Diversion	1	$4,245.00	$4,245.00	0.7%
6	Runon Control	1600	$0.96	$1,536.00	0.2%
7	Excavate Mine Waste	48800	$1.50	$73,200.00	11.5%
8	Stream Channel Backfill	13400	$5.00	$67,000.00	10.5%
8	Filter Fabric	5000	$1.80	$9,000.00	1.4%
8	Type 1 Riprap	540	$28.50	$15,390.00	2.4%
8	Type 3 Riprap	1060	$28.50	$30,210.00	4.7%
9	Mine Waste Grading	48800	$0.11	$5,368.00	0.8%
10	Cover Soil	13500	$2.80	$37,800.00	5.9%
11	Fertilize and Seed	12.5	$450.00	$5,625.00	0.9%
12	Mulch	9.5	$450.00	$4,275.00	0.7%
13	Erosion Control Mat	1150	$1.00	$1,150.00	0.2%
14	Construct Fences	3000	$1.15	$3,450.00	0.5%
15	Obliterate Road	3000	$1.00	$3,000.00	0.5%
16	Storm Water	1	$650.00	$650.00	0.1%
16	Straw Bales	0	$9.00	$0.00	0.0%
16	Silt Fence	0	$1.00	$0.00	0.0%
			TP-2/TP-4 Total	$305,236.00	47.9%
	TP-3				
3	Clear & Grub	1	$9,379.00	$9,379.00	1.5%
5	Temporary Stream Diversion	1	$117,135.00	$117,135.00	18.4%
5	Pipe Refund	1000	($3.75)	($3,750.00)	-0.6%
6	Runon Control	800	$1.00	$800.00	0.1%
7	Excavate Mine Waste	21000	$3.00	$63,000.00	9.9%
8	Stream Channel Backfill	4100	$5.85	$23,985.00	3.8%
8	Filter Fabric	2550	$1.80	$4,590.00	0.7%
8	Type 1 Riprap	350	$36.50	$12,775.00	2.0%
8	Type 3 Riprap	500	$36.50	$18,250.00	2.9%
8	Plug Underdrain	1	$1,680.00	$1,680.00	0.3%
9	Mine Waste Grading	21000	$1.25	$26,250.00	4.1%
10	Cover Soil	8600	$3.73	$32,078.00	5.0%
11	Fertilize and Seed	15.6	$450.00	$7,020.00	1.1%
12	Mulch	13.4	$450.00	$6,030.00	0.9%
13	Erosion Control Mat	580	$1.00	$580.00	0.1%
14	Construct Fences	1300	$1.15	$1,495.00	0.2%
14	Extra Fence	2500	$1.60	$4,000.00	0.6%
15	Obliterate Road	6500	$1.00	$6,500.00	1.0%
			TP-3 Total	$331,797.00	52.1%
			Grand Total	$637,033.00	100.0%

Table 6. Total Construction Cost Summary.

Item No.	Description	Total Quantity	Unit	Total Cost	Percent of Total
1	Mob, Bond, Insurance	1	LS	$34,949.00	5.5%
2	Road Improvements	9400	LF	$2,538.00	0.4%
3	Clear & Grub	1	LS	$12,079.00	1.9%
4	Mill Removal	1	LS	$3,150.00	0.5%
5	Temporary Stream Diversions	1	LS	$117,630.00	18.5%
6	Runon Control	2400	LF	$2,336.00	0.4%
7	Excavate Mine Waste	69800	CY	$136,200.00	21.4%
8	Stream Channel Backfill	17500	CY	$90,985.00	14.3%
8	Filter Fabric	7550	SY	$13,590.00	2.1%
8	Type 1 Riprap	890	CY	$28,165.00	4.4%
8	Type 3 Riprap	1560	CY	$48,460.00	7.6%
8	Plug Underdrain	1	LS	$1,680.00	0.3%
9	Mine Waste Grading	69800	CY	$31,618.00	5.0%
10	Cover Soil	22100	CY	$69,878.00	11.0%
11	Fertilize and Seed	28.1	Acre	$12,645.00	2.0%
12	Mulch	22.9	Acre	$10,305.00	1.6%
13	Erosion Control Mat	1730	SY	$1,730.00	0.3%
14	Construct Fences	6800	LF	$8,945.00	1.4%
15	Obliterate Road	9500	LF	$9,500.00	1.5%
16	Storm Water	1	LS	$650.00	0.1%
			Total	$637,033.00	100.0%

TABLE 7. SUMMARY OF ENGINEERING COSTS.

ENGINEERING SERVICE	AMOUNT
Reclamation Work Plan, Field Sampling Plan, and Supporting Documentation	$25,432.37
Site Characterization	$81,963.41
Engineering Evaluation/Cost Analysis	$21,390.50
Engineering Design and Bid Specification Preparation	$26,630.14
Construction Engineering	$46,540.08
TOTAL	$201,956.50

6.0 PROJECT SUMMARY

6.1 SUMMARY OF THE PROJECT

The project went as scheduled with few modifications. The only significant change was the addition of tailings pile TP-3 to the contract, which approximately doubled the scope of the project. Even with the addition of TP-3, the project was completed ahead of the original 90 day contract deadline.

6.2 SITE CONDITION AFTER COMPLETION

The areas targeted for reclamation at the Piegan-Gloster Millsite have been reclaimed and the hazards associated with the site have been mitigated.

6.3 MAINTENANCE OR FOLLOW-UP

Inspection and maintenance of the site will be the most critical in the first two years following reclamation. The site is most vulnerable to erosion until the vegetation is well established. The site should be inspected after spring runoff in 1997. Items that should be inspected include:

- checking the stability of the tailings surfaces and slopes;
- checking for tailings subsidences;
- checking for erosion of the disturbed native slopes adjacent to the constructed channels and road;
- checking the stability of the runon control ditches;
- evaluating the stability and performance of the riprap channels;
- evaluating the success of the revegetation efforts; and
- check the integrity of the fencing.

Maintenance should be completed as needed to repair excessive erosion and reseed areas that are not adequately revegetated. An inspection in late June or July should be after the seasonal peak runoff has occurred, and would allow time to complete required maintenance and allow seeding in the fall.

MDEQ/MWCB is currently developing a program for inspection and maintenance of reclaimed mine sites. Specific procedures for inspection and maintenance will be presented in a written report and a contractor will be procured by MDEQ/MWCB for implementing the inspection and maintenance programs.

6.4 CONSTRUCTION BID PACKAGE

Copies of the design drawings, which were provided in the bid package, are located in Appendix H. In addition, the design drawings for tailings pile TP-3, which were incorporated into the contract via Change Order No. 3, are included in Appendix D. These drawings represent the reclamation engineering design from which the bids were prepared and the project was constructed.

6.5 AS-BUILT DRAWINGS

In general, the project was constructed as shown on the design drawings. The alignment of the stream channels were changed slightly to key in to the elevation of native material after the tailings were removed. The channel alignments were conservatively designed with respect to the anticipated tailings volume, and the field changes generally provided for more tailings storage volume, which resulted in flatter tailings slopes. This greatly enhances the overall stability of the completed project. In all cases, the maximum slopes of 3:1 for the dam faces and 4:1 adjacent to the reconstructed channels were met. The typical slopes on TP-2 and TP-3 are 5:1 or flatter.

To adequately prepare as-built drawings for the project, a final topographic survey of the tailings piles would be required. A final survey was not needed to determine quantities for payment. MDEQ decided that, since the changes from the design drawings that were made during construction were minor, a final survey was an unnecessary expense that would not enhance the project. Thus, no as-built drawings were prepared.

7.0 COMMENTS/SUGGESTIONS

The Piegan-Gloster Millsite Reclamation Project was completed ahead of schedule at a cost below the engineers estimate. In general, the project went smoothly and all project objectives were met. M.K. Weeden Construction, Inc. had the proper equipment and was well prepared to complete the project. MDEQ/MWCB, Olympus, and MKW worked well as a team and were able to avoid common conflicts between owners, engineers, and contractors. The following suggestions are intended to help prevent minor problems from recurring on future projects.

The most significant problem encountered on the project was the failure of the TP-2 underdrain. Piegan Creek has flowed through the underdrain since TP-2 was constructed in the early 1900's. Based on the underdrain's historical performance and logistical constraints, it was reasonable and prudent to use the underdrain as the stream diversion during construction. The underdrain failure was untimely and unanticipated. Fortunately, the site layout was such that there were two feasible alternatives for diverting the stream at the time of the failure. Other sites where in-place containment of tailings is implemented should be thoroughly evaluated for stream diversions and suitable alternatives. Designers should prepare contingency plans during the design phase that can be implemented in the event of a diversion failure.

A difficulty arose out of miscommunication and/or lack of communication between the MDEQ/MWCB, Olympus, MKW, and the land owner regarding the source of cover soil. The land owner had given the MKW permission to borrow cover soil from a previously undisturbed area on the property. MDEQ/MWCB and Olympus initially approved the request, but later found out that the land owner was expecting compensation for the soil so the borrow operation was halted. The situation was resolved to the satisfaction of all parties. Approximately four acres of additional revegetation was required to reclaim the new borrow area; however, the project was enhanced because better quality topsoil was blended in with the cover soil borrowed from placer tailings source and placed on TP-4. The better quality topsoil should enhance the revegetation of TP-4, which has the steepest slopes. The MDEQ/MWCB, Olympus, and MKW all admitted partial fault for the miscommunication. To prevent these types of problems in the future, the chain of command and decision making authority, which are established at the start of the project, need to be reinforced and maintained throughout the life of the project.

8.0 PHOTOGRAPHS

Photographs taken to document the work performed are included in Appendix I. An index of the photographs, with a description of each photo is included with the photographs.

APPENDIX A

PRE-BID CONFERENCE MEETING MINUTES

OLYMPUS
ENVIRONMENTAL, INC.

INTEROFFICE MEMO

To: Piegan-Gloster Millsite Reclamation Project File (5760)
From: Kevin Rauch
Date: July 8, 1996
Subject: Pre-Bid Conference

The Pre-Bid Conference for the Piegan-Gloster Millsite Reclamation Project was held on Wednesday, July 3, 1996, at 9:00 a.m. at the project site. The meeting participants met at the gate at the mouth of Piegan Creek. Representatives at the meeting included Joel Chavez and Cassandra Noble (MDEQ/AMRB), Kevin Rauch and Dustin Wasley of Olympus, and 18 potential contractors (see attached sign up sheet).

Kevin Rauch began the meeting by giving a brief overview of the scope of work. Cassandra Noble talked about the bidding process and contractor registration. Joel Chavez discussed the required permits, and the status of those permit applications. After this discussion, a tour of the site was given, starting at the placer tailing borrow source north of the county road.

The tour proceeded up the Piegan Creek road. Because of limited space for vehicles on the road and turning around, the bidders were asked to car pool up to the site. On the way up the road, we stopped and discussed the road improvements required in the specifications. Because of the bad road, the vehicles were parked at the lower end of the bog area and we walked up to TP-2 and TP-4. After the tour was over, time was allowed for the contractors to walk around and look at the site. Because there were not many questions, and no major clarifications required, Joel Chavez announced that there would be no amendments to the bid package. The conference ended at approximately 11:30 a.m.

The following is a list of questions that were asked during the tour:

Q. Is traffic control required on county road to haul cover soil from the placer tailings borrow area?

A. Yes. The county road department has indicated that, at a minimum, "trucks entering" signs (probably two at specified intervals from each direction) would be required, and depending on the frequency of crossing, that flaggers could be required. Bidders should check with the road department to be sure.

Q. Can fence at intersection with county road be removed to allow a wider approach for haul trucks?

A. Yes, but it must be replaced at the contractor's expense.

Q. How wide will the road be?

A. Fifteen feet wide.

Q. What should be done with tree slash from the road improvement?

A. Windrow it on the road fill slope to act as a stormwater filter BMP.

Q. How deep are the tailings?

A. About 25-30 feet on TP-2 and 40-45 feet on TP-4.

Q. How accurate are estimates of tailings depths?

A. Tailings depths were determined from soil borings and test pits. Should be very accurate. Soil boring and test pit logs are included in appendix in bid documents.

Q. What is the entire area of the tailings?

A. 6.8 acres.

Q. What is the volume of excavation?

A. Design quantities are 48,800 cy tailings removal and placement/grading, 13,400 cy stream channel backfill, and 13,500 cy cover soil.

Q. Why are streams not constructed to meander through the tailings areas?

A. The whole basis of the design is to keep the tailings in place and protect them from the streams. The stream channel/tailings removal is designed to provide long-term stability of the in-place tailings.

Q. How far west do the tailings extend on TP-2?

A. Tailings basically extend to the slope break along the west side of TP-2.

Q. Where is riprap source?

A. On road cut slope adjacent to TP-2.

Q. How far down under the surface is the underdrain pipe in the sinkhole?

A. Based on observation of streamflow in the sink hole, pipe is assumed to be near the bottom of the sinkhole.

Q. How will underdrain be patched?

A. It depends on the extent of the leak in the pipe. The purpose of the patch is to keep the pipe from plugging with tailings when the sinkhole is backfilled. We are not looking for an air-tight patch, but one that will keep pipe from plugging with tailings. After the area is excavated out, we will work with the contractor to find a good, cost-effective solution.

Q. Can tree slash from tailings piles be burned?

A. No. There has been no permit issued for burning.

Q. Where does slash go?

A. Can be placed along road fill slope or stockpiled and placed on tailings piles for a stormwater filter BMP prior to seeding.

Q. How thick is cover soil?

A. 18 inches.

Q. Where are construction access roads located?

A. Is at the contractors discretion, with Engineer's approval. We anticipate that tailings will be pushed out over the east side of the TP-4 dam to flatten the slope and that a haul road will be constructed up to TP-4.

Q. How wet are the tailings?

A. Based on drillings and test pits, tailings are dryer at the top and wetter near the bottom. Some tailings are saturated. Soil boring and test pit logs in back of bid package give written descriptions of tailings and moisture content. This is the best information available.

Q. What should be done with mill debris?

A. Bid package says to stockpile it adjacent to the mill, but we have decided to bury it in the flat area below the mill foundation. Disturbed areas should be seeded.

Q. How are we going to put temporary diversion on slope between TP-2 and TP-4?

A. Hillside is rocky, so we will have to keep it as low on the hill as possible to keep the disturbance to a minimum. Will probably require a steep drop off the west side of TP-4. We will work with the contractor to choose a suitable route that can safely be constructed. The ditch for the temporary diversion can also be used as the runon control ditch.

Q. How did you determine the final contours of the tailings piles?

A. Was determined based on the volume of tailings before and after construction, which should be essentially the same. The final contours in the drawings represent the volume required to contain the tailings after removal and placement of tailings from the drainage. The actual contours may vary from the design contours, but the maximum slopes (4:1 adjacent to the channels and 3:1 on the dam faces) must be achieved.

Pre - BID MEETING, 7/3/96 9:00 AM.

Piegan-Gloster Millsite Reclamation Project.

Name	Company	Address	phone #
[illegible]	[illegible]	Box [illegible]	[illegible]
Becky Garcani	Steam Works	P.O. Box 878 Lincoln	[illegible]
Rusty Giulio	R.S. Giulio	P.O. Box 330 Boulder	225-3754
Wayne Allen	High Mountain Const.	P.O. Box 14695, Helena	443-1821
Art Thompson	Thompson Farm + Ex	Wolf Creek	562-3562
Louie Magin	Magin's Excavation	Ulm, Mt	8663530
Don Dow	Hydrometrics	P.O. Box 1338 E. Helena	227-3341
JOE ALINE	Shumaker Trucking & Excavating	P.O. Box 1442 GREAT Falls, MT	727-3537 Fax 727-9
Tom Wing	Hydrometrics	Box 1338 E. Helena	[illegible]
Greg Mock	[illegible]	PO Box [illegible]	[illegible]
Ed [illegible]	Baxter Const	Billings	[illegible]
David Mize	J & D Const.	Box 516 Belgrade	285-4456
GARY DAVIS	Dennas Inc.	Shepherd MT	373-6601
MIKE BROWNE	BLM	PO Box 3388, BUTTE, 59701	494-5059
DARRELL BLACKMAN	N.W. Reclamation	BOX 1114	296-2045
KENT WAGONER	ENVIROCON INC	Taylor Miss	4062220198
MARK MERCILL	RICH-MARK-CORP	Box 505 LINCOLN	406-362-4740
PAT WALTERS	ERI	Box 45 Wallace ID	208-556-1111
TIB COSTIN	ERNW	222 N. ALASKA BUTTE	406-723-8213
STEVE SHEPPARD	TOWER MTN	~~544~~ BUTTE MT.	406-782-3255

APPENDIX B

BID TABULATIONS

DEQ/AMRB 95-002
DATE 07/11/96

PIEGAN-GLOSTER MILLSITE
LEWIS AND CLARK COUNTY, MONTANA

BID TABULATIONS				ENGINEER'S ESTIMATE		M. K. Weeden		High Mountain		Hydrometrics, Inc.	
Item Number	Estimated Quantity	Unit	Description	Unit Price	Total Price						
1.	1	LS	MOBILIZATION, BONDING, AND Ins		0.00	34949.00	34,949.00	15000.00	15,000.00	25,750.00	25,750.00
2.	9,400	LF	ROAD IMPROVEMENTS/ROAD CONStruction		0.00	.27	2,538.00	.53	4,982.00	2.20	20,680.00
3.	1	LS	CLEARING AND GRUBBING		0.00	2700.00	2,700.00	2000.00	2,000.00	855.00	855.00
4.	1	LS	MILL TIMBER REMOVAL/SALVAGE		0.00	3150.00	3,150.00	2,500.00	2,500.00	1,140.00	1,140.00
5.	1	LS	TEMP STREAM DIVERSION		0.00	4245.00	4,245.00	7460.00	7,460.00	6,650.00	6,650.00
6.	1,600	LF	RUNON CONTROL DITCH CONSTRUCTION		0.00	.96	1,536.00	6.00	9,600.00	1.52	2,432.00
7.	48,800	CY	EXCAVATE MINE WASTES, HAUL, AND PLACE		0.00	1.50	73,200.00	1.64	80,032.00	1.68	81,984.00
8.			RECONSTRUCT STREAM CHANNEL		0.00		0.00		0.00		0.00
	13,400	CY	Backfill and Compact		0.00	5.00	67,000.00	5.00	67,000.00	4.85	64,990.00
	5,000	SY	Filter Fabric		0.00	1.80	9,000.00	1.50	7,500.00	1.95	9,750.00
	540	CY	Type 1 Riprap		0.00	17.14	9,255.60	15.00	8,100.00	33.25	17,955.00
	1,060	CY	Type 3 Riprap		0.00	17.14	18,168.40	15.00	15,900.00	20.05	21,253.00
9.	48,800	CY	MINE WASTE GRADING		0.00	0.11	5,368.00	1.00	48,800.00	.32	15,616.00
10.	13,500	CY	COVER SOIL APPLICATION TO GRADED MINE TAILINGS		0.00	2.80	37,800.00	4.00	54,000.00	4.75	64,125.00

BID TABULATIONS				ENGINEER'S ESTIMATE		M. K. Weeden		High Mountain		Hydrometrics, Inc.	
Item Number	Estimated Quantity	Unit	Description	Unit Price	Total Price						
11.	10.5	Acre	FERTILIZE AND SEED		0.00	450.00	4,725.00	750.00	7,875.00	645.00	6,772.50
12.	10.5	Acre	MULCH		0.00	450.00	4,725.00	1200.00	12,600.00	760.00	7,980.00
13.	1,150	SY	INSTALL EROSION CONTROAL MAT		0.00	1.00	1,150.00	2.87	3,300.50	1.90	2,185.00
14.	3,000	LF	CONSTRUCT FENCES		0.00	1.15	3,450.00	2.83	8,490.00	3.65	10,950.00
15.	3,000	LF	OBLITERATE AND RECLAIM TEMPORARY ROADWAYS		0.00	1.00	3,000.00	.75	2,250.00	.95	2,185.00
16.	1		OBTAIN MPDES STORMWATER PERMIT		0.00	0.00	0.00		0.00		0.00
	1	LS	Discharge Permit		0.00	650.00	650.00	650.00	650.00	650.00	650.00
	100	Each	Straw Bales		0.00	9.00	900.00	5.00	500.00	6.00	600.00
	1,000	LF	Silt Fence		0.00	1.00	1,000.00	1.50	1,500.00	1.45	1,450.00
TOTAL					0.00		288,510.00		360,039.50		366,617.50

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USE SECOND SHEET IF MORE THAN 4 BIDDERS

DEQ/AMRB 95-002
DATE 07/11/96

PIEGAN-GLOSTER MILLSITE
LEWIS AND CLARK COUNTY, MONTANA

BID TABULATIONS				ENGINEER'S ESTIMATE		Ajax Contracting		Environcon Inc.		Donnes Inc.	
Item Number	Estimated Quantity	Unit	Description	Unit Price	Total Price						
1.	1	LS	MOBILIZATION, BONDING, AND Ins		0.00	35000.00	35,000.00	52500.00	52,500.00	51,350.00	51,350.00
2.	9,400	LF	ROAD IMPROVEMENTS/ROAD CONStruction		0.00	3.50	32,900.00	2.80	26,320.00	0.50	4,700.00
3.	1	LS	CLEARING AND GRUBBING		0.00	2500.00	2,500.00	46000.00	46,000.00	10000.00	10,000.00
4.	1	LS	MILL TIMBER REMOVAL/SALVAGE		0.00	10000.00	10,000.00	1,670.00	1,670.00	2500.00	2,500.00
5.	1	LS	TEMP STREAM DIVERSION		0.00	25000.00	25,000.00	9680.00	9,680.00	2000.00	2,000.00
6.	1,600	LF	RUNON CONTROL DITCH CONSTRUCTION		0.00	5.00	8,000.00	7.50	12,000.00	5.00	8,000.00
7.	48,800	CY	EXCAVATE MINE WASTES, HAUL, AND PLACE		0.00	2.00	97,600.00	1.50	73,200.00	3.00	146,400.00
8.			RECONSTRUCT STREAM CHANNEL		0.00		0.00		0.00		0.00
	13,400	CY	Backfill and Compact		0.00	1.95	26,130.00	5.10	68,340.00	9.00	120,600.00
	5,000	SY	Filter Fabric		0.00	2.00	10,000.00	2.70	13,500.00	2.00	10,000.00
	540	CY	Type 1 Riprap		0.00	25.00	13,500.00	17.80	9,612.00	30.00	16,200.00
	1,060	CY	Type 3 Riprap		0.00	20.00	21,200.00	15.60	16,536.00	30.00	31,800.00
9.	48,800	CY	MINE WASTE GRADING		0.00	0.50	24,400.00	.67	32,696.00	.50	24,400.00
10.	13,500	CY	COVER SOIL APPLICATION TO GRADED MINE TAILINGS		0.00	3.50	47,250.00	4.60	62,100.00	5.00	67,500.00

BID TABULATIONS				ENGINEER'S ESTIMATE		Ajax Contracting		Environcon Inc.		Donnes Inc.	
Item Number	Estimated Quantity	Unit	Description	Unit Price	Total Price						
11.	10.5	Acre	FERTILIZE AND SEED		0.00	1000.00	10,500.00	670.00	7,035.00	500.00	5,250.00
12.	10.5	Acre	MULCH		0.00	1000.00	10,500.00	1340.00	14,070.00	500.00	5,250.00
13.	1,150	SY	INSTALL EROSION CONTROAL MAT		0.00	1.60	1,840.00	4.85	5,577.50	5.00	5,750.00
14.	3,000	LF	CONSTRUCT FENCES		0.00	2.00	6,000.00	3.60	10,800.00	2.00	6,000.00
15.	3,000	LF	OBLITERATE AND RECLAIM TEMPORARY ROADWAYS		0.00	1.50	1,840.00	2.80	8,400.00	.30	900.00
16.	1		OBTAIN MPDES STORMWATER PERMIT		0.00	0.00	0.00		0.00		0.00
	1	LS	Discharge Permit		0.00	650.00	650.00	650.00	650.00	650.00	650.00
	100	Each	Straw Bales		0.00	10.00	1,000.00	4.50	450.00	10.00	1,000.00
	1,000	LF	Silt Fence		0.00	5.00	5,000.00	4.80	4,800.00	3.00	3,000.00
TOTAL					0.00		393,470.00		475,936.50		523,250.00

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USE SECOND SHEET IF MORE THAN 4 BIDDERS

PIEGAN-GLOSTER MILLSITE
LEWIS AND CLARK COUNTY, MONTANA

DEQ/AMRB 95-002
DATE 07/11/96

BID TABULATIONS				ENGINEER'S ESTIMATE		Shumaker Trucking		Smith Contracting		Environmental Reclamation NW.	
Item Number	Estimated Quantity	Unit	Description	Unit Price	Total Price						
1.	1	LS	MOBILIZATION, BONDING, AND Ins		0.00	50000.00	50,000.00	31500.00	31,500.00	99,974.00	99,974.00
2.	9,400	LF	ROAD IMPROVEMENTS/ROAD CONStruction		0.00	.35	3,290.00	3.00	28,200.00	2.75	25,850.00
3.	1	LS	CLEARING AND GRUBBING		0.00	7500.00	7,500.00	7500.00	7,500.00	35250.00	35,250.00
4.	1	LS	MILL TIMBER REMOVAL/SALVAGE		0.00	5000.00	5,000.00	4,500.00	4,500.00	2500.00	2,500.00
5.	1	LS	TEMP STREAM DIVERSION		0.00	10000.00	10,000.00	10500.00	10,500.00	9850.00	9,850.00
6.	1,600	LF	RUNON CONTROL DITCH CONSTRUCTION		0.00	3.00	4,800.00	2.75	4,400.00	8.50	13,600.00
7.	48,800	CY	EXCAVATE MINE WASTES, HAUL, AND PLACE		0.00	2.60	126,880.00	3.00	146,400.00	3.00	146,400.00
8.			RECONSTRUCT STREAM CHANNEL		0.00		0.00		0.00		0.00
	13,400	CY	Backfill and Compact		0.00	4.60	61,640.00	6.00	80,400.00	15.24	204,216.00
	5,000	SY	Filter Fabric		0.00	2.00	10,000.00	1.50	7,500.00	2.50	12,500.00
	540	CY	Type 1 Riprap		0.00	25.00	13,500.00	27.50	14,850.00	16.00	8,640.00
	1,060	CY	Type 3 Riprap		0.00	25.00	26,500.00	27.00	28,620.00	14.00	14,840.00
9.	48,800	CY	MINE WASTE GRADING		0.00	1.50	73,200.00	1.25	61,000.00	.70	34,160.00

BID TABULATIONS				ENGINEER'S ESTIMATE		Shumaker Trucking		Smith Contracting		Environmental Reclamation NW.	
Item Number	Estimated Quantity	Unit	Description	Unit Price	Total Price						
10.	13,500	CY	COVER SOIL APPLICATION TO GRADED MINE TAILINGS		0.00	4.60	62,100.00	6.00	81,000.00	6.66	89,910.00
11.	10.5	Acre	FERTILIZE AND SEED		0.00	500.00	5,250.00	1100.00	11,550.00	600.00	6,300.00
12.	10.5	Acre	MULCH		0.00	750.00	7,875.00	1500.00	15,750.00	1200.00	12,600.00
13.	1,150	SY	INSTALL EROSION CONTROAL MAT		0.00	[illegible].00	5,750.00	12.50	14,375.00	4.40	5,060.00
14.	3,000	LF	CONSTRUCT FENCES		0.00	3.00	9,000.00	1.50	4,500.00	3.25	9,750.00
15.	3,000	LF	OBLITERATE AND RECLAIM TEMPORARY ROADWAYS		0.00	.25	750.00	2.25	6,750.00	2.50	7,500.00
16.	1		OBTAIN MPDES STORMWATER PERMIT		0.00	0.00	0.00		0.00		0.00
	1	LS	Discharge Permit		0.00	650.00	650.00	650.00	650.00	650.00	650.00
	100	Each	Straw Bales		0.00	10.00	1,000.00	10.50	1,050.00	4.00	400.00
	1,000	LF	Silt Fence		0.00	6.00	6,000.00	2.75	2,750.00	4.50	4,500.00
TOTAL					0.00		490,685.00		563,745.00		744,450.00

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USE SECOND SHEET IF MORE THAN 4 BIDDERS

APPENDIX C

PROJECT START-UP FORMS

NOTICE OF AWARD

TO: M. K. Weeden Construction Inc.
941 W. Erie
Lewistown, MT. 59457

DATE: July 17, 1996

PROJECT: Piegan - Gloster Millsite
DEQ-AMRB: 95-002

PROJECT DESCRIPTION: Stabilization of mill tailings, stream channel reconstruction, and demolition of the mill building.

The Owner has considered the Bid submitted by you for the above-described Work in response to its Invitation for Bid dated July 11th, 1996.

You are hereby notified that your bid has been accepted, based on a tabulation of the Bid Items.

You are required by the Instructions to Bidders to execute the Agreement and furnish the required Certificate of Workman's Compensation within 15 calendar days from the date of this Notice.
If you fail to execute said Agreement within 15 days from the date of this Notice, said Owner will be entitled to consider all your rights arising out of the Owner's acceptance of your Bid as abandoned and as forfeiture of your Bid Bond. The Owner will be entitled to such other rights as may be granted by law.

You are required to return an acknowledged copy of this Notice of Award to the Owner.

Dated this 17 day of July, 1996.

OWNER: DEPARTMENT OF ENVIRONMENTAL QUALITY

By: Judy A Hanson
for Title: Forest Farris, Contracts Officer

ACCEPTANCE OF NOTICE OF AWARD

Receipt of the above Notice of Award is hereby acknowledged this 20th day of July, 1996.

CONTRACTOR: MK WEEDEN CONST. INC.

By: Marto Weeden
Title: PRESIDENT

RECEIVED
JUL 25 1996
DEPT. ENVIRONMENTAL QUALITY

NOTICE TO PROCEED

TO: Weeden Construction, Inc.
941 W. Erie
Lewistown, MT 59457

DATE: 8/7/96
PROJECT: Piegan Gloster Millsite Reclamation Project, Lewis and Clark Co.
DSL-AMRB: 95-002

In accordance with the Agreement dated July 20, 1996, you are hereby notified to commence Work no later than August 7, 1996, and you are to complete the Work within 90 consecutive calendar days thereafter. The date of completion of all Work is, therefore, November 4, 14, 1996.

OWNER: DEPARTMENT OF ENVIRONMENTAL QUALITY

By:
Title:

ACCEPTANCE OF NOTICE TO PROCEED

Receipt of the above Notice to Proceed is hereby acknowledged this 5th day of AUGUST, 1996

CONTRACTOR: MK WEEDEN CONST INC.

By: MONTE WEEDEN
Title: PRES

APPENDIX D

CHANGE ORDERS

CHANGE ORDER

ORDER NO. 1

PROJECT TITLE: Piegan-Gloster Millsite Reclamation Project

DEQ-AMRB No.: 95-002

CONTRACT DATE: 8-7-96

OWNER: Montana Department of Environmental Quality-Abandoned Mine Reclamation Bureau

CONTRACTOR: MK Weeden Construction, Inc.

Change Orders must be accompanied by an itemized cost breakdown. You are hereby requested to comply with the following changes from the Contract Documents. (Show separate costs for materials, labor, equipment, and miscellaneous. Show percent where applicable.)

ITEM NO.	DESCRIPTION OF CHANGES- ESTIMATED QUANTITIES & UNITS	COST OF CHANGES					TOTAL COST
		MATL'S	LABOR	EQUIP.	MISC.	TOTAL UNIT COST	
8	Obtaining and hauling riprap from new source (1,600 c.y.)					$11.36	$18,176
	TOTAL COST - MATERIALS, LABOR, EQUIPMENT & MISC.						$18,176
	OVERHEAD & PROFIT@ -0-%						-0-
	GRAND TOTAL - THIS CHANGE ORDER						$18,176

Original Contract Price	$288,510.00
Current Contract Price Adjusted by Previous Change Order	$288,510.00
Cost this Change Order (+ or -_)	+$18,176.00
New Contract Price including this Change Order	$306,686.00

The completion date as set forth in the Contract Documents shall be ([✓ unchanged,] increased, decreased) by 0 calendar days.

The date for completion of all work will be 11-14-96.

Description and Justification for Change:

1. The designated source of riprap did not yield the amount necessary to complete the contract. Therefore, a new source was identified by the Engineer. The new source is approximately 0.7 miles away from the site and requires some minor road improvements. The contract unit price for riprap is $17.14 per cubic yard. The price for riprap from the new source is $28.50, which is a difference of $11.36. This difference covers the road improvement and increased haul distance.

SURETY CONSENT

The Surety hereby consents to the aforementioned Contract Change Order and agrees that its bond or bonds shall apply and extend to the Contract as thereby modified or amended per this Change Order. The Principal and the Surety further agree that on or after execution of this consent, the penalty of the applicable Performance Bonds or Bonds is hereby increased by $ 18,176.00 (100% of the Change Order amount) and the penalty of the applicable Labor and Material Bond or Bonds is hereby increased by $ 18,176.00 (100% of the Change Order amount).

COUNTERSIGNED BY MONTANA
RESIDENT AGENT
Gordon D. McManus
GORDON D. MCMANUS
FLYNN INSURANCE AGENCY, BOX 711, GREAT FALLS, MT

SURETY
FIRST NATIONAL INSURANCE COMPANY OF AMERICA
By:
JOHN D. LEAF Seal ATTORNEY-IN-FACT

Recommended by: Engineer Date 9-3-96

Accepted by: Contractor Date 9/3/96

Approved by: Owner Date 9/24/96

CHANGE ORDER

ORDER NO. 2

PROJECT TITLE: Piegan-Gloster Millsite Reclamation Project

DEQ-AMRB No.: 95-002

CONTRACT DATE: August 7, 1996

OWNER: Montana Department of Environmental Quality-Abandoned Mine Reclamation Bureau

CONTRACTOR: MK Weeden Construction, Inc.

Change Orders must be accompanied by an itemized cost breakdown. You are hereby requested to comply with the following changes from the Contract Documents. (Show separate costs for materials, labor, equipment, and miscellaneous. Show percent where applicable.)

ITEM NO.	DESCRIPTION OF CHANGES- ESTIMATED QUANTITIES & UNITS	COST OF CHANGES					TOTAL COST
		MATL'S	LABOR	EQUIP.	MISC.	TOTAL UNIT COST	
1	Mob, Insurance, Bonding						
3	Clearing and Grubbing					9,379	9379
5	Temporary Stream Diversion					117,135	117,135
6	Runon Control Ditch Construction					1.00	800
7	Excavate Mine Wastes, Haul, and Place					3.00	63,000
8	Reconstruct Stream Channel						
	Backfill and Compact					5.85	23,985
	Filter Fabric					1.80	4,590
	Type 1 Riprap					36.50	12,775
	Type 3 Riprap					36.50	18,250
	Plug TP-3 Underdrain					1,680	1,680
9	Mine Waste Grading					1.25	26,250
10	Cover Soil Application To Graded Tailings					3.73	32,078
11	Fertilize and Seed					450	3,330
12	Mulch					450	3,330
13	Install Erosion Copntrol Mat					1	580
14	Construct Fences					1.15	2127.50
15	Obliterate and Reclaim Temp. Roadways					1	6,500

TOTAL COST - MATERIALS, LABOR, EQUIPMENT & MISC.	$325,789.50
OVERHEAD & PROFIT@ -0-%	-0-
GRAND TOTAL - THIS CHANGE ORDER	$325,789.50

Original Contract Price	$288,510.00
Current Contract Price Adjusted by Previous Change Order	$306,686.00
Cost this Change Order (+ or -_)	+$325,789.50
New Contract Price including this Change Order	$632,475.50

The completion date as set forth in the Contract Documents shall be (unchanged, [✓ increased], decreased) by 30 calendar days.

The date for completion of all work will be December 14, 1996.

Description and Justification for Change:

1. Reclamation of tailings pile TP-3 was added to the scope of work. The attached Special Provisions, Technical Specifications, and Drawings are revised from the Invitation to Bid (95-002) and define the scope of work and quantities for this change order.

SURETY CONSENT

The Surety hereby consents to the aforementioned Contract Change Order and agrees that its bond or bonds shall apply and extend to the Contract as thereby modified or amended per this Change Order. The Principal and the Surety further agree that on or after execution of this consent, the penalty of the applicable Performance Bonds or Bonds is hereby increased by $ 325,789.50 (100% of the Change Order amount) and the penalty of the applicable Labor and Material Bond or Bonds is hereby increased by $ 325,789.50 (100% of the Change Order amount).

COUNTERSIGNED BY MONTANA RESIDENT AGENT	SURETY
GORDON D. MCMANUS FLYNN INSURANCE AGENCY, BOX 711, GREAT FALLS, MT	FIRST NATIONAL INSURANCE COMPANY OF AMERICA By: JOHN D. LEAF Seal ATTORNEY-IN-FACT

Recommended by: Engineer 9-19-96 Date

Accepted by: Contractor 9/19/96 Date

Approved by: Owner 9/24/96 Date

PIEGAN-GLOSTER MILLSITE RECLAMATION PROJECT
ABANDONED MINE RECLAMATION BUREAU
DSL-AMRB 95-002

(Revised for tailings Pile TP-3 Change Order)

3.24 DESCRIPTION OF WORK

Work on this project will consist of the following items:

(a) Mobilization, Bonding, and Insurance (Pay Item No. 1).

(1) General. This item will constitute payment for all preparatory work and operations performed by the Contractor, including, but not limited to, those actions necessary for the transportation and movement of personnel, equipment, supplies and incidentals to the project site; for necessary permits (other than the MPDES Stormwater Permit discussed under Pay Item No. 16); for the establishment of all offices and other facilities necessary to work on the project; for premiums on contract bonds; for insurance (including the Pollution Prevention Liability Insurance discussed herein) for the contract; and for other work and operations that must be performed or costs incurred before beginning work on the various items on the project site. Mobilization costs for subcontracted work shall be considered to be included. Approved certificates of insurance and invoice receipts shall be required as a prerequisite for payment per the requirements for submittal review.

Mobilization shall include the preparation of staging areas, as shown on the Drawings and approved by the Engineer. Drainage and erosion protection for staging areas shall be provided during construction as approved by the Engineer. Oil, grease, and other liquid wastes shall be properly stored as per regulations onsite and shall not be disposed of in the staging area or on the project site. All liquid wastes shall be disposed off-site at a properly licensed facility. Immediately following completion of construction, the staging areas shall be thoroughly cleaned of all trash and debris, scarified, seeded, fertilized, and mulched.

(2) Work Included.

All labor, tools, equipment, materials, and incidentals necessary to complete the work as specified.

(3) Measurement. Measurement shall be by the lump sum price bid for "Mobilization, Bonding, and Insurance."

(4) Payment. Partial payments for mobilization will be made once each month as work progresses based on the lump sum contract price for "Mobilization," as follows:

(i) When 5% or more of the original contract amount is earned from other pay items, 50% of the amount for mobilization will be paid.

(ii) When 10% or more of the original contract amount is earned from other pay items, 80% of the amount for mobilization will be paid.

(iii) Upon completion of all work on the project, any unpaid amount for mobilization will be paid.

(iv) The original contract amount is the total price of the contract as bid and includes the mobilization item. Previous payments for mobilization will not be included in the computation of the percentage of the original contract amount earned.

(c) Clearing and grubbing including timber harvest (Pay Item No. 3).

(1) General. Drawings and general provisions of the Contract and Technical Specifications apply to work under this section. The work includes the harvest and decking of timber, clearing and grubbing, and dust control. A small, unmeasured quantity of saleable timber may be present in this area. Saleable timber shall become the property of the property owner without charge and shall be decked in a designated area on site. Additional clearing and grubbing may be necessary on short access road spurs. Any additional clearing shall be considered incidental to the contract. The work is to be performed in accordance with Technical Specifications Subsection 4.3.

(2) Work Included.

- Site preparation;
- Timber harvesting;
- Decking saleable timber;
- Clearing and grubbing;
- Slash treatment; and
- All labor, tools, equipment, materials, and incidentals necessary to complete the work as specified.

(3) Measurement. There will be no direct measurement for this item.

(4) Payment. Payment shall be at the lump sum price bid for "Clearing and Grubbing Including Timber Harvest", which price and payment shall constitute full compensation for all labor, equipment, tools, and incidentals necessary to accomplish the work as specified.

(e) Temporary stream diversion (Pay Item No. 5)

(1) General. Drawings and general provisions of the Contract and Technical Specifications apply to work under this section. This work item includes constructing a temporary stream diversion upstream of TP-3 to divert stream flows around the tailings pile during construction activities. The approximate location of the temporary stream diversion is shown on the Drawings. Work is to be performed in accordance with Technical Specification Subsection 4.5.

(2) Work included.

- Excavation of a trench to lay diversion piping in;
- Construction of temporary earthen berm to collect stream flow;
- Installation of piping through earthen dam and routing of stream flow around tailings impoundments;
- Restoration of areas disturbed by the temporary stream diversion.
- All labor, tools, equipment, materials, and incidentals necessary to complete the work as specified.

(3) Measurement. There will be no direct measurement for this item.

(4) Payment. Payment shall be at the lump sum price bid for "Temporary Stream Diversion", which price and payment shall constitute full compensation for all labor, equipment, tools, and incidentals necessary to accomplish the work as specified.

(f) Runon control ditch construction (Pay Item No. 6).

(1) General. Drawings and general provisions of the Contract and Technical Specifications apply to work under this section. The work includes excavating trenches and constructing berms to form ditches and diversions as shown on the Drawings. The work may also include the construction of riprap outfalls, at the discretion of the Engineer. Riprap outfalls will consist of approximately one cubic yard of randomly placed approved riprap material; construction of riprap outfalls will be incidental to this work task.

The runon control ditches shall be constructed in the vicinity of the regraded tailings pile, as shown on the Drawings, to prevent runon to the tailings and to convey runoff away from sensitive areas. Approximately 800 feet of runon control ditche shall be constructed at a minimum slope of 3% and maximum slope of 5%.

All ditches shall be constructed to discharge onto native soils. If the native soils are not adequate to accommodate the discharge from the ditches (per the Engineer), a riprap outfall shall be constructed. Soil excavated from the runon control ditches shall be used to form a berm on the downgradient side of the ditch. All areas disturbed by ditch construction shall be fertilized, seeded, and mulched in accordance with the specifications contained herein. Work is to be performed in accordance with Technical Specification Subsection 4.6.

(2) Work Included.

- Site preparation including clearing and grubbing;
- Providing and maintaining detailed construction control;
- Excavating shallow trenches;
- Constructing and compacting berms using material excavated from the trench;
- Constructing riprap outfalls as specified; and
- All labor, tools, equipment, materials, and incidentals necessary to complete the work as specified.

(3) Measurement. This item will be measured by the number of lineal feet, based on the actual quantity measured by the Engineer, of ditch constructed.

(4) Payment. Runon control ditches will be paid for at the Contract unit price bid per lineal foot for each type of ditch constructed, which price and payment shall constitute full compensation for all labor, equipment, materials, and incidentals necessary to accomplish the work as specified. Construction of riprap outfalls will be incidental; no additional payment will be allowed for constructing riprap outfalls. Fertilizing, seeding, and mulching of constructed ditches shall also be incidental.

(g) Excavate mine wastes, haul, and place (Pay Item No. 7).

(1) General. Drawings and general provisions of the Contract and Technical Specifications apply to work under this section. The extent of earthwork is shown on the Drawings. The earthwork involves excavating mine tailings from tailings pile TP-3 to facilitate reconstruction of the stream channel. Stream reconstruction is discussed in work item "h". Approximately 21,000 bank cubic yards of tailings will be removed from TP-3 (including underlying contaminated soil). The work includes excavation, hauling, and stockpiling of the mine tailings on areas of the tailings pile away from the active stream drainage. If water is encountered in the excavation, temporary berms or settling basins shall be constructed, as directed by the Engineer. These basins shall be considered incidental to this work item. The stockpiled mine tailings will be graded after the streams have been

reconstructed. Grading is discussed in work item "i". Work is to be performed in accordance with Technical Specification Subsection 4.7.

The bottom layers of tailings may be partially wet; if the tailings are excessively wet, it will be necessary to temporarily stockpile the wet material to allow the water to drain and/or evaporate, which may require double handling. Haul truck tires shall be kept clean of mine wastes to avoid tracking of contaminated materials along the haul route. To accommodate the excavation of mine wastes adjacent to Piegan Creek flowing through TP-3, the Contractor shall install a temporary diversion of the stream, as specified in work item "e".

(2) Work Included.

- Site preparation including clearing and grubbing;
- Excavating the mine wastes specified on the Drawings to a depth corresponding with the natural underlying soil;
- Excavating contaminated soil underlying the mine wastes as specified by the Engineer;
- Hauling the excavated materials to areas on the tailings pile located away from the stream channel to be reconstructed and placing or stockpiling;
- Watering for dust control;
- Drying excessively wet tailings that may be encountered; and
- All labor, tools, equipment, materials, and incidentals necessary to complete the work as specified.

(3) Measurement. Measurement shall be by the design quantity of bank cubic yards of material excavated. The design quantity was determined utilizing the average end area method based on a detailed site survey of existing conditions and estimates of depth of mine wastes to be excavated based on soil borings, test pits, and surrounding topography. Any necessary double-handling and/or moisture conditioning of the excavated materials will be considered incidental. Removal and disposal of debris encountered during the excavation shall also be considered incidental to this work task.

(4) Payment. This item will be paid for at the Contract unit price bid per cubic yard (design quantity) for "Excavate Mine Wastes, Haul, and Place", which price and payment shall constitute full compensation for all labor, equipment, tools, and incidentals necessary to accomplish the work as specified. The construction actions necessary to separate out timber and debris, construct temporary settling basins or berms, dewatering, and moisture conditioning of excavated materials will be considered incidental. Clean up of haul route spillage shall also be considered incidental to this work task.

(h) Reconstruct stream channel (Pay Item No. 8).

(1) General. Drawings and general provisions of the Contract and Technical Specifications apply to work under this section. This work shall consist of the construction of approximately 660 lineal feet of hydraulically stable stream channel capable of providing long-term stabilization of the contained-in-place mine tailings. The extent of earthwork is shown on the Drawings, and is estimated at 4,100 bank cubic yards. This work item includes backfilling the excavated areas to approximate lines and grades on the Drawings, compaction of the backfill materials, shaping of the stream bed and banks, lining the stream channels with riprap, and dust control. Riprap quantities are estimated at 850 bank cubic yards. Geotextile filter fabric placement beneath the riprap is estimated at 2,550 square

yards. Excess soil resulting from the road construction and borrow material from the placer tailing source identified on the Drawings shall be used as the backfill source. The backfill shall not be placed when the ground is frozen, excessively wet, or otherwise in a condition detrimental to the work. Work is to be performed in accordance with Technical Specification Subsection 4.8.

The present stream channel configuration is shown on the Drawings. Fill material will be imported from road construction excavation and placer tailings borrow source to achieve the lines and grades shown on the Drawings. The stream channels will be lined with riprap ranging up to 15 inches in diameter as specified in the Technical Specifications Subsection 4.8.

Drop structures shall be constructed at approximately 200 foot intervals in TP-3 in order to dissipate energy. Each drop structure will require the installation of large diameter (up to 28 inch) riprap as shown on the Drawings.

(2) Work Included.

- Loading, hauling, placing and compacting fill material to establish the stream channel grade;
- Construction of the stream bed and banks;
- Loading, hauling, and placing riprap to line the stream channels
- Watering for dust control;
- Removal of the temporary diversion after completion of construction and returning flow into the channel;
- Plugging of the TP-3 underdrain with concrete; and
- All labor, tools, equipment, materials, and incidentals necessary to complete the work as specified.

(3) Measurement. Stream channel reconstruction will be measured by the number of bank cubic yards, based on the design quantity, of material applied to the excavated areas. The design quantity was determined utilizing the average end area method based on the mine tailings removal plans and the design stream grades. Any necessary double-handling and/or moisture conditioning of the excavated materials will be considered incidental.

(4) Payment. This item will be paid for at the Contract unit price bid per design quantity cubic yard for "Reconstruct stream channel ", which price and payment shall constitute full compensation for all labor, equipment, tools, and incidentals necessary to accomplish the work as specified.

(i) Mine waste grading (Pay Item No. 9).

(1) General. Drawings and general provisions of the Contract and Technical Specifications apply to work under this section. Currently tailings pile TP-3 comprises a total surface area of approximately 4.4 acres. After stream reconstruction and regrading, the tailings pile is anticipated to cover approximately 3.55 acres. The tailings shall be graded to typical slopes of less than 4 horizontal to 1 vertical adjacent to the stream channels, and 3 horizontal to 1 vertical on the tailings dam face. The volumes of material to grade are equal to the volume of excavated tailings (21,000 bank cubic yards) discussed in work item "g". Work is to be performed in accordance with Technical Specification Subsection 4.9.

(2) Work included.

- Grade tailings pile TP-3 to the approximate lines and grades specified on the Drawings;
- Watering for dust control; and
- All labor, tools, equipment, materials, and incidentals necessary to complete the work as specified.

(3) Measurement. Grading of the tailings pile will be measured by the number of bank cubic yards, based on the design quantity, of tailings removed from the stream channel. The design quantity was determined utilizing the average end area method based on a detailed site survey of existing conditions and estimates of depth of mine wastes to be excavated based on soil borings and surrounding topography. The design quantity of tailings to be graded is the same as the design quantity of tailings excavation.

(4) Payment. This item will be paid for at the Contract unit price bid per design quantity cubic yard for "Mine Waste Grading", which price and payment shall constitute full compensation for all labor, equipment, tools, and incidentals necessary to accomplish the work as specified.

(j) Cover soil application to graded mine tailings (Pay Item No. 10).

(1) General. Drawings and general provisions of the Contract and Technical Specifications apply to work under this section. This work item includes applying the cover soil to tailings pile TP-3 after it has been graded to provide a surface amenable to revegetation. The cover soil shall not be applied when the ground is frozen, excessively wet, or otherwise in a condition detrimental to the work. A minimum 1.5-foot-thick layer of cover soil shall be applied to the graded surface of the tailings pile; this cover soil thickness corresponds to approximately 8,600 bank cubic yards. Cover soil shall be placed on all tailings deposition areas in accordance with the Technical Specifications. Cover soil shall be obtained from the placer tailings borrow source and/or excess material resulting from the road improvement. Work is to be performed in accordance with Technical Specification Subsection 4.10.

(2) Work Included.

- Loading cover soil from borrow source(s);
- Transporting cover soil to the graded tailings area;
- Unloading cover soil onto the graded tailings area;
- Grading cover soil on the graded tailings area at a minimum uniform depth of 1.5 feet;
- Providing construction control;
- Watering for dust control; and
- All labor, tools, equipment, materials, and incidentals necessary to complete the work as specified.

(3) Measurement. Cover soil will be measured by the number of bank cubic yards, based on the design quantity, of material applied to the graded tailings area. The design quantity is based on the estimated post-grading area of the tailings, shown on the Drawings, and a minimum fill depth of 1.5 feet.

(4) Payment. This item will be paid for at the Contract unit price bid per cubic yard for "Cover soil application to graded mine tailings", which price and payment shall constitute full compensation for all labor, equipment, tools, and incidentals necessary to accomplish the work as specified.

(k) Fertilize and seed (Pay Item No. 11).

(1) General. The contractor shall reclaim the specified disturbed areas by drill seeding where possible. When broadcast or hydraulic seeding methods are used, the application rates shall be doubled at no additional cost to the Owner. The disturbed areas include: 1) the graded and covered tailings pile; 2) the backfilled source excavations; 3) the temporary roads specified to be reclaimed following the construction activities, and 4) all other areas disturbed by the reclamation project (including staging areas, ditches, etc.). Work is to be performed in accordance with Technical Specification Subsection 4.11.

(A) Seedbed Preparation. Prior to executing the seeding, fertilizing, and mulching work items, the seedbed at all locations specified shall be prepared so these items can most effectively be completed in conformance with the Technical Specifications. The seeding, fertilizing, and mulching work items shall be executed only after the seedbed has been accepted by the Engineer. Due to difficult site access (steepness), hand raking for seedbed preparation may be allowed where approved by the Engineer.

This work will consist of furnishing all labor, equipment, and materials necessary to complete the seedbed preparation as required by the Technical Specifications. Disking, seeding, and other agronomic activities shall only be completed under appropriate soil moisture conditions for agronomic purposes. The ground surface will be brought to the lines and grades shown on the Drawings to blend with adjacent topography at the completion of grading. The cover soil shall be brought to a friable condition to depths (0.5 - 1 feet), as specified for each reclaimed area. A disk, harrow, or other implement approved by the Engineer shall be used.

(B) Fertilize and Seed. All areas at the site disturbed in the execution of the work shall be seeded, fertilized, and mulched. All disturbed areas shall be seeded with the Seed Mix. The Contractor shall accomplish this work in accordance with the Fertilizing and Seeding Subsection of the Technical Specifications, and also in accordance with the provisions contained herein. Due to difficult site access (steepness), alternate seeding, fertilizing, and mulching methods used by the Contractor may be allowed, but shall be approved by the Owner and Engineer through submittal processes prior to conducting the work.

(i) Fertilizer. Fertilizer shall be applied at the rate specified below. Fertilizer shall be applied to the prepared seedbed prior to seeding or mulching and shall be blended with the cover soil as called for in the Technical Specifications, or concurrently with the seed. All areas shall be fertilized with a fertilizer mixture containing the following nutrients [the fertilizer mix ratio shall be 28-8-2 (N-P-K) applied at a rate of 150 pounds per acre]:

Nitrogen (N):	110 pounds per acre Urea
Phosphorus (P):	32 pounds per acre phosphorus pentoxide
Potassium (K):	8 pounds per acre

All required fertilizer certificates shall be provided to the Engineer a minimum of 3 days prior to fertilizing. The certification shall include the guaranteed analysis of the fertilizer mixture stated in terms of the percentages of nitrogen (N), available phosphorus (P), and potash (K2O), in that order.

(ii) Seed Certification. Seed certifications as required by the Technical Specifications shall be submitted to the Engineer prior to seeding. The Contractor shall also submit a copy of the bill or other documentation from the seed supplier showing actual bulk weights of the individual seed types combined in the mix. The required certifications and documentations shall be provided to the Engineer a minimum of 3 days prior to seeding.

(iii) Seeding. The following application rates for seed are based on the drill seeding method. When the broadcast seeding method or the hydraulic seeding method is used, the application rates listed below shall be doubled at no additional cost to the Owner. One seed mixture shall be used; the seed mix shall be formulated specifically for the graded tailings pile and applied at a rate of 18 pounds per acre.

SEED MIX FOR THE PIEGAN-GLOSTER MILLSITE

Scientific Name	Common Name	lbs PLS/ acre[1,2]
Grasses		
Poa compressa	Canada Bluegrass	0.5
Agrostis stolonifera (alba)	Red top	0.5
Agropyron trachycaulum	Slender Wheatgrass	5
Festuca idahoensis	Idaho Fescue	3
Agropyron riparium	Streambank Wheatgrass	5
	Total	**14**
Forbs		
Lupinus sericeus	Silky Lupine	3
Achillea millefolium	Common Yarrow	0.5
Trifolium repens	White Clover	0.5
	Total	**4**

Notes:
1. PLS = Pure Live Seed
2. Reported rates are for drill seeding; rates shall be doubled for hydraulic and broadcast seeding.

(2) Work Included.

- Preparing the seed beds;
- Furnishing, applying, and incorporating fertilizer to the disturbed areas;
- Furnishing and applying (via drill application where possible) the Seed Mix; and
- All labor, tools, equipment, materials, and incidentals necessary to complete the work as specified.

(3) Measurement. This item will be measured by the number of acres, based on the design quantity, upon which the specified amount of effective nutrients (elemental nitrogen, phosphorus, and potassium) are incorporated into the soil, and upon which the specified weight of pure live seed is applied to the prepared seed beds. The design quantity was determined by measuring, on scaled maps, the anticipated areas of disturbance that will require revegetation. Seedbed preparation shall be considered incidental to this pay item.

(4) Payment. This item will be paid for at the Contract unit price bid per acre for "Fertilize and Seed", which price and payment shall constitute full compensation for all labor, equipment, materials, and

incidentals necessary to accomplish the work as specified. No separate payment shall be made for seedbed preparation, which shall be considered incidental to this pay item.

(l) Mulch (Pay Item No. 12).

(1) General. The Contractor shall use Straw Mulch or Wood Fiber Mulch and Tackifier. For slopes less steep than 2.5:1, crimping shall be used as the mulch anchoring mechanism. For slopes steeper than 2.5:1 , hydromulch shall be applied. Work is to be performed in accordance with Technical Specification Subsection 4.12.

(A) Vegetative Mulch. A straw mulch (certified weed seed free) shall be applied at a rate of 3,000 pounds per acre in accordance with the Technical Specifications in those areas which are to be seeded with the Seed Mix. Straw mulch shall be anchored by a mulch tiller (crimper). Straw mulch is subject to the Engineer's approval and must be free of noxious weeds. Equipment used to spread straw shall not chop or otherwise decrease the effective length of the applied mulch.

(B) Wood Fiber Mulch and Tackifier. Wood fiber mulch shall be applied at a rate of 2,000 pounds per acre in accordance with the Technical Specifications in those areas which are to be seeded. Wood fiber mulch shall be applied concurrently with a non-asphaltic tackifier on all hydromulched areas at a the manufacturer's recommended rate (or a minimum of 40 pounds per acre for slopes flatter than 2:1 and 80 pounds per acre for slopes 2:1 or steeper).

(C) Summer Erosion Control Procedure. In the event that construction is completed before September 1, the cover soil shall be uniformly spread over the disturbed areas (in accordance with the provisions contained herein). The cover soiled areas shall then be mulched immediately in accordance with the provisions described above. A "no-till" drill with "no-till" coulters may be used to seed and fertilize directly into the mulched areas during permanent seeding after the September 1 date. Cost for all summer erosion control installations will be considered under the unit price for the permanent mulching. No additional compensation will be allowed for this work item. Any erosion damage to the cover soil shall be repaired prior to permanent seeding at no cost to the Owner.

(2) Work Included.

- Furnishing mulch and hydromulch/tackifier mixture;
- Executing summer erosion control procedure;
- Covering specified areas with mulch or hydromulch as required by the Technical Specifications;
- Finishing mulched areas; and
- All labor, tools, equipment, materials, and incidentals necessary to complete the work as specified.

(3) Measurement.

(A) Mulch. This item will be measured by the number of acres, based on the design quantity, upon which mulch is applied and accepted as specified. The design quantity is based on the estimated disturbed surface area that will require mulch after work is complete, including the regraded tailings pile, obliterated roadways, ditches, staging areas, etc.

(B) Summer Erosion Control Procedure. Work required for the Summer Erosion Control Procedure will not be measured for payment. This work, if required, will not be paid for directly, but the costs for materials and execution of this work shall be included in the unit price bid for applying mulch.

(C) Water. Water used for mulching and/or tackifier placement will not be measured for payment. The costs for materials and execution of this work shall be included in the unit price for mulching.

(4) Payment. This item will be paid for at the Contract unit price bid per acre, which price and payment shall constitute full compensation for all labor, equipment, materials, and incidentals necessary to accomplish the work as specified.

(m) Install Erosion Control Mat (Pay Item No. 13).

(1) General. Drawings and general provisions of the Contract and Technical Specifications apply to work under this section. Erosion control mat shall be installed along the bottom and sides of the tailings pile runon control ditches. Approximately 580 square yards of mat will be required. Installation, overlaps, anchoring, and stapling are discussed in Technical Specification Subsection 4.13. Work is to be performed in accordance with Technical Specification Subsection 4.13.

(2) Work Included.

- Furnishing, properly storing, installing, and anchoring erosion control mat to the specified disturbed areas;
- Furnishing and applying staples to the mat as specified;
- Constructing and backfilling anchor trenches as specified;
- Finishing areas where the mat is applied; and
- All labor, tools, equipment, materials, and incidentals necessary to complete the work as specified.

(3) Measurement. This item will be measured by the number of square yards, based on the actual measured quantity by the Engineer, upon which the Erosion Control Mat is applied. This measurement shall be of the effective area covered by the erosion control mat and shall not include overlaps or erosion control mat placed in anchor trenches.

(4) Payment. This item will be paid for at the Contract unit price bid per square yard for "Install Erosion Control Mat", which price and payment shall constitute full compensation for all labor, equipment, materials, and incidentals necessary to accomplish the work as specified.

(n) Construct Fences (Pay Item No. 14).

(1) General. Drawings and general provisions of the Contract and Technical Specifications apply to work under this section. Upon completion of all work within the work areas, metal post and 4 strand, barbed-wire fences will be constructed to enclose the tailings pile to allow for the establishment of vegetation without interference from livestock. Approximately 1,850 lineal feet of fence shall be constructed at the locations shown on the Drawings and as corner staked in the field by the Engineer. The finished height of the fence shall be a minimum of 4.5 feet. The fences shall be constructed in accordance with Technical Specification Subsection 4.14. The fences shall surround the disturbed areas and shall be at least ten (10) feet outside of any disturbed area.

(2) Work Included.

- All layout, grading, and clearing necessary to efficiently and properly construct the fences (approximately 1,850 lineal feet total);
- Furnish and install barbed wire, metal posts, deadmen, and tie wire as specified;
- Furnish and install fence corner panels as specified;
- Furnish and install end posts and terminal posts as specified; and
- All labor, tools, equipment, materials, and incidentals necessary to complete the work as specified.

(3) Measurement. Fences will be measured by the number of lineal feet (rounded to the nearest 1.0 lineal foot), based on the actual measured quantity, of fence constructed and installed. The measurement will be made along the top of the fence from outside to outside of end posts for each continuous run of fence.

(4) Payment. This item will be paid for at the Contract unit price bid per lineal foot for "Construct Fences", which price and payment shall constitute full compensation for all labor, equipment, materials, and incidentals necessary to accomplish the work as specified. Braces, anchors, deadmen, etc. shall be considered incidental to the construction of the fence, and no additional payment will be allowed for these items.

(o) Obliterate and Reclaim Temporary Roadways (Pay Item No. 15).

(1) General. Drawings and general provisions of the Contract and Technical Specifications apply to work under this section. Some of the temporary roadways constructed at the site will be obliterated and reclaimed immediately after the reclamation activities are completed. Sections of the roads to be obliterated are shown on the Drawings. The roads to be obliterated and reclaimed will be graded to match the existing contours. The reclaimed areas will then be scarified (seedbed preparation), fertilized, seeded, and mulched in accordance with the provisions contained herein. Work is to be performed in accordance with Technical Specification Subsection 4.15.

(2) Work Included.

- Sections of the roadways shall be obliterated where shown on the Drawings;
- The roadbed shall be ripped, plowed, or scarified to promote the establishment of vegetation;
- Restoration of the natural drainage pattern;
- Slopes shall be rounded to approximate the original contour;
- Furnish and apply fertilizer, seed mix, and mulch as specified; and
- All labor, tools, equipment, materials, and incidentals necessary to complete the work as specified.

(3) Measurement. This item will be measured by the number of lineal feet, based on the actual measured quantity (rounded to the nearest 1.0 lineal feet), of road which is obliterated and reclaimed. Seedbed preparation, fertilizing, seeding, and mulching will be measured separately as described for Pay Items No. 11 and 12.

(4) Payment. This item will be paid for at the Contract unit price bid per lineal feet for "Obliterate and Reclaim Temporary Roads", which price and payment shall constitute full compensation for all labor, equipment, materials, and incidentals necessary to accomplish the work as specified.

Fertilizing, seeding, and mulching of obliterated roadways will be paid for at the Contract unit price bid per acre under "Fertilize and Seed" and "Mulch", as described for Pay Items No. 11 and 12.

3.25 LIST OF ESTIMATED WORK QUANTITIES

A list of estimated work quantities is presented on Table 3-1.

TABLE 3-1 PIEGAN-GLOSTER MILLSITE, LIST OF ESTIMATED WORK QUANDITIES

ITEM NO.	DESCRIPTION	UNIT	ESTIMATED QUANTITY
1	MOBILIZATION, BONDING, AND INSURANCE	Lump Sum	1
3	CLEARING AND GRUBBING INCLUDING TIMBER HARVEST	Lump Sum	1
5	TEMPORARY STREAM DIVERSION	Lump Sum	1
6	RUNON CONTROL DITCH CONSTRUCTION	Lineal Feet	800
7	EXCAVATE MINE WASTES, HAUL, AND PLACE	Cubic Yards	21,000
8	RECONSTRUCT STREAM CHANNEL		
	Backfill and Compact	Cubic Yards	4,100
	Filter Fabric	Square Yards	2,550
	Type 1 Riprap	Cubic Yards	350
	Type 3 Riprap	Cubic Yards	500
	Plug TP-3 Underdrain	Lump Sum	1
9	MINE WASTE GRADING	Cubic Yards	21,000
10	COVER SOIL APPLICATION TO GRADED MINE TAILINGS	Cubic Yards	8,600
11	FERTILIZE AND SEED	Acre	7.4
12	MULCH	Acre	7.4
13	INSTALL EROSION CONTROAL MAT	Square Yards	580
14	CONSTRUCT FENCES	Lineal Feet	1,850
15	OBLITERATE AND RECLAIM TEMPORARY ROADWAYS	Lineal Feet	6,500

PIEGAN-GLOSTER MILLSITE RECLAMATION PROJECT
ABANDONED MINE RECLAMATION BUREAU
DEQ-AMRB 95-002

(Revised for Tailings Pile TP-3 Change Order)

This section references appropriate standard specifications found in the current edition of the Montana Department of State Lands, Abandoned Mine Reclamation Bureau Standard Specifications for Abandoned Mine Reclamation Construction (effective January 1, 1991). These specifications are standardized for all Abandoned Mine Reclamation Projects and portions of the specifications may not specifically pertain to this project. The additional technical specifications included in this section are intended to supplement and addend the standard specifications.

4.1 MOBILIZATION

4.1.1 General

Mobilization shall consist of all preparatory work and operations performed by the Contractor necessary for the transportation and movement of personnel, equipment, supplies, and incidentals to the project site. Mobilization shall also include acquisition of bonds, insurance, and permits required to complete the work.

4.1.2 Reference Specifications

The following reference specifications from Standard Specifications for Abandoned Mine Reclamation Construction are hereby made part of this contract.

- Section 501: Mobilization

4.1.3 Materials

As part of mobilization, the Contractor shall provide a safe storage area for all materials intended for the work until it has been incorporated in the completed project.

4.3 CLEARING AND GRUBBING INCLUDING TIMBER HARVEST

4.3.1 General

The Contractor shall clear and grub the tailings areas including harvesting and decking of timber. Saleable timber designated for removal, shall become the property of the Property Owner without charge and shall be decked in a designated area on site.

4.3.2 Reference Specifications

The following reference specifications from Standard Specifications for Abandoned Mine Reclamation Construction are hereby made part of this contract.

- Section 201: Clearing & Grubbing

4.3.3 Materials

Materials shall meet all requirements found within the referenced Standard Specifications.

4.3.4 Execution

The general construction sequence for :Clearing and Grubbing Including Timber Harvest" includes, but is not necessarily limited to the following:

- Harvesting acres of timber in the vicinity of the tailings pile and temporary diversion;
- Decking saleable timber in a designated area on site;
- Separating out and windrowing construction slash outside the clearing limits;
- When slash is windrowed, it shall be placed approximately parallel to the roadway outside the toe of the fill slope;
- Pieces of wood less than 3-inches in diameter and 3-feet in length may be scattered within the clearing limits; and
- Site clearing and grubbing in accordance with the standard specifications.

4.5 TEMPORARY STREAM DIVERSION

4.5.1 General

The Contractor will construct a temporary stream diversion in Piegan Creek starting upstream of TP-3, and continuing along the west side of TP-3. Stream flow will be diverted around the tailings pile during the tailings excavation and stream channel reconstruction work items as discussed in Section 4.7 and 4.8 of these specifications. The work will consist of constructing a small earthen berm to collect stream flow into a 24-inch pipe to divert the stream flow around TP-3, as shown on the Drawings. The pipe will be installed at a 0.5 to 1 percent slope. The temporary diversion will discharge downstream of TP-3.

4.5.2 Reference Specifications

The following reference specifications from Standard Specifications for Abandoned Mine Reclamation Construction are hereby made part of this contract.

- Subsection 201: Clearing and Grubbing;
- Subsection 202: Excavation and Embankment;
- Subsection 203: Providing and/or Stockpiling Backfill Materials;
- Subsection 206: Haul;
- Subsection 540: Provide Water; and
- Subsection: 610: Storm Drain and Culverts.

4.5.3 Materials

Materials shall meet all requirements found within the referenced Standard Specifications.

4.5.4 Execution

The general construction sequence for "Temporary Stream Diversion" includes, but is not necessarily limited to the following:

- Site preparation including clearing and grubbing;
- Hauling, placing, and compacting backfill material to construct the earthen berm upstream from TP-3, as shown on the Drawings;
- Installation of piping through the earthen berm as shown on the Drawings; and
- Placing the piping along the approximate line and grade as shown on the Drawings and staked in the field.

4.6 RUNON CONTROL DITCH CONSTRUCTION

4.6.1 General

This work shall consist of constructing approximately 800 lineal feet of runon control ditches as shown on the Drawings and in accordance with the specifications contained herein. The ditches will be formed by excavation and embankment of native soils and the installation of erosion control mat.

4.6.2 Reference Specifications

The following reference specifications from Standard Specifications for Abandoned Mine Reclamation Construction are hereby made part of this contract.

- Subsection 201: Clearing and Grubbing;
- Subsection 202: Excavation and Embankment;
- Subsection 206: Haul;
- Subsection 310: Cover Soil;
- Subsection 340: Erosion Control Mat; and
- Subsection 540: Provide Water.

4.6.3 Materials

Materials used to form embankments shall consist of native soils excavated to form the ditch. Cover soils for embankments shall meet the requirements of Subsection 310.02 of the Standard Specifications. Erosion control mat shall meet the requirements for the erosion control mat specified in Section 4.13 of these specifications.

4.6.4 Execution

The construction sequence for "Runon Control Ditch Construction" includes, but is not necessarily limited to the following:

- Excavate materials to form approximately 800 lineal feet of the ditch to the lines and grades shown on the Drawings and staked in the field;
- Compact embankment to form berms as shown on the Drawings;
- Install erosion control mat in accordance with the specifications in Section 4.13;
- Fertilize, seed, and mulch all disturbed areas in accordance with Sections 4.11 and 4.12 of these Technical Specifications.

4.6a RIPRAP DITCH OUTFALL

4.6a.1 General

This work shall consist of constructing a riprap ditch or diversion outfall intended to dissipate energy. The work shall consist of placing random riprap as directed by the Engineer.

4.6a.2 Reference Specifications

- Subsection 530: Riprap

4.6a.3 Materials

Riprap materials shall meet the requirements of Subsection 530.02(C) of the Standard Specifications.

4.6a.4 Execution

Diversions and ditches are designed to discharge onto the native soils at the site. However, the Engineer may determine that the native soils are inadequate to accommodate the discharge. In this case, a riprap outfall shall be constructed. Construction shall consist of placing a minimum of one cubic yard of random riprap, to a minimum depth of 18 inches at the centerline of the ditch or diversion, at the outfall of the ditch or diversion.

4.7 EXCAVATE MINE WASTES, HAUL, AND PLACE

4.7.1 General

The Contractor shall excavate the identified tailings (approximately 21,000 bank cubic yards, including underlying contaminated material) to the approximate lines and grades shown on the Drawings. The Contractor shall transport the tailings from the active stream drainage to an area of the tailings pile away from the active drainage. The bottom layers of tailings may be wet; if the tailings are excessively wet, it will likely be necessary to temporarily stockpile the wet material to allow the water to drain and to allow exposure to air and sunlight for drying, requiring double handling. As directed by the Engineer, if free water is encountered while excavating the lower portion of tailings, the Contractor shall construct temporary settling basins and/or berms, as necessary, to contain the water. Soil boring and test pit logs for the tailings pile are included in Appendix C, and contain qualitative information regarding moisture in the tailings. The Contractor will be responsible for providing adequate haulage access to the excavation areas, so that the specified wastes can be transported as efficiently as possible.

The Owner and Engineer will coordinate with Montana Power Company to provide means for efficiently excavating tailings and backfilling with designated borrow soils in the vicinity of the overhead power poles in the locations shown on the Drawings.

4.7.2 Reference Specifications

The following reference specifications from Standard Specifications for Abandoned Mine Reclamation Construction are hereby made part of this contract.

- Subsection 201: Clearing and Grubbing;
- Subsection 202: Excavation and Embankment;
- Subsection 206: Haul;
- Subsection 220: Waste Pile Disposal;
- Subsection 502: Debris and Structure Removal; and
- Subsection 540: Provide Water.

4.7.3 Materials

Materials shall meet all requirements found within the referenced Standard Specifications.

4.7.4 Execution

The general construction sequence for "Excavate Mine Wastes, Haul, and Place" includes, but is not necessarily limited to the following:

- Site preparation including clearing and grubbing;
- Providing adequate access for haul trucks or scrapers in the excavation/loadout areas to allow efficient loadout of the specified wastes;
- Excavating the specified mine wastes to a depth corresponding with the natural underlying soil;
- Excavating contaminated soil underlying the mine wastes as specified by the Engineer;
- Temporarily stockpiling excessively wet mine waste to allow the water to drain (and to allow exposure to air and sunlight for drying);
- Constructing temporary settling basins and/or berms, as necessary, to contain any free water that may be encountered while excavating the lower portion of tailings pile;
- Loading and hauling the excavated materials to the deposition areas;
- Placing the excavated materials in the deposition area in 12-inch loose lifts and compacting by normal equipment tracking;
- The TP-3 tailings dam shall be excavated from the crest and sloped back to achieve a slope of 3 horizontal to 1 vertical or flatter; and
- The toe of the TP-3 tailings dam shall not be disturbed.

4.8 RECONSTRUCT STREAM CHANNEL

4.8.1 General

The Contractor shall reconstruct the section of the Piegan Creek stream channel and bank that flows through TP-3 . The channel/bank reconstruction will consist of placing approximately 4,100 bank cubic yards of embankment, 2,550 square yards of geotextile filter fabric, and 850 bank cubic yards of riprap to the approximate lines and grades shown on the Drawings, the construction of drop structures to dissipate energy, and lining the channel with riprap. Embankment material will be obtained from road construction excavation, placer tailings borrow materials, or other source as directed by the Engineer.

4.8.2 Reference Specifications

The following reference specifications from Standard Specifications for Abandoned Mine Reclamation Construction are hereby made part of this contract.

- Subsection 202: Excavation and Embankment;
- Subsection 203: Providing and/or Stockpiling Backfill Materials;
- Subsection 206: Haul;
- Subsection 530: Riprap;
- Subsection 540: Provide Water;
- Subsection 550: Traffic Control; and
- Subsection 650: Construction Fabric

4.8.3 Materials

Materials shall meet all requirements found within the referenced Standard Specifications as well as the following specifications.

4.8.3.1 Riprap

Riprap to be placed as channel lining shall be obtained from the rock talus slopes approximately 0.2 miles south of the mill area, the placer tailings borrow source, or other suitable source as directed by the Engineer. The riprap size shall correspond to those shown on the Drawings. Filter fabric shall be placed under all riprap channel lining.

Nominal thickness as indicated in Subsection 530.01 (D) shall refer to the minimum thickness of the riprap layer, measured perpendicular to the slope. The maximum, mean, and minimum rock size (equivalent spherical diameter) shall be as follows:

Riprap Type	Rock Size* (inches)		
	Maximum	Mean	Minimum
Type 1	28	22	7
Type 3	15	9	3/16

*Equivalent spherical diameter.

4.8.3.2 Geotextile Filter Fabric

Geotextile filter fabric shall meet the requirements of Subsection 650.02 (C) of the Standard Specifications.

4.8.4 Execution

The general construction sequence for "Reconstruct Stream Channel" includes, but is not necessarily limited to the following:

- Scarifying the surface of the excavated source areas to provide an adherable surface for the borrow soil;
- Loading fill material from borrow areas, as directed by the Engineer;
- Transporting fill material to the excavated source areas;
- Unloading fill material in the excavated source areas;
- Grading the fill soil in the excavated source areas to the approximate lines and grades shown on the drawings;
- Compacting fill to 95% of the maximum density (as determined by ASTM D 698 / AASHTO T 99);
- Lining the reconstructed stream channel with geotextile filter fabric and riprap;
- Removing the temporary stream diversion structure, as described in Section 4.5 of these specifications, returning the stream flow into the channel; and
- Plugging of the upstream and downstream ends of the TP-3 underdrain pipe with concrete.

4.8.4.1 Geotextile Shipment And Storage

The geotextile shall be kept dry and wrapped such that it is protected from the elements during shipping and storage. At no time shall the geotextile be exposed to ultraviolet light for a period exceeding 14 days. The geotextile shall be labeled as per ASTM D 4873, "Guide for Identification, Storage and Handling of Geotextiles." Rolls shall be stored in a manner which protects them from the elements. If stored outdoors, the rolls shall be elevated and protected with a waterproof cover.

4.8.4.2 Geotextile Placement

The geotextile shall be placed on a smooth graded surface approved by the Engineer. The geotextile shall be placed in such a manner that it will not excessively stretch or tear upon placement of the overlying materials. Care should be taken to place the geotextile in intimate contact with the soil such that no void spaces exist between the underlying soil and the geotextile. Anchoring of the geotextile shall be accomplished though the use of key trenches or aprons at the crest of the slope according to the manufacturers specifications.

Care shall be taken to avoid contamination of the geotextile during construction. Contaminated geotextile shall be removed or repaired as directed by the Engineer at no cost to the owner.

4.8.4.3 Gravel and Riprap

Gravel and riprap placement shall begin across the channel bottom to the toe and proceed up each side slope. Gravel shall not be dropped onto the geotextile from a height exceeding 3 feet. Any geotextile damaged during placement of rip rap or gravel shall be replaced as directed by the Engineer at the contractor's expense.

4.9 MINE WASTE GRADING

4.9.1 General.

The Contractor shall grade out the tailings pile to the approximate lines and grades specified on the Drawings . The tailings pile shall be graded to ensure positive drainage from the pile in a manner that will not concentrate runoff and cause erosion. The pile shall typically be graded to less than 4 horizontal to 1 vertical adjacent to the stream channels; the tailings dam faces shall be graded to 3 horizontal to 1 vertical, or less. The steep slopes may necessitate construction of short access roads and/or benches to complete the work as specified.

4.9.2 Reference Specifications

The following reference specifications from Standard Specifications for Abandoned Mine Reclamation Construction are hereby made part of this contract.

- Subsection 202: Excavation and Embankment

4.9.3 Materials

Materials shall meet all requirements found within the referenced Standard Specifications.

4.9.4 Execution

The general construction sequence for "Mine Waste Grading" includes, but is not necessarily limited to, grading out the tailings pile to the approximate lines and grades specified on the Drawings and in these specifications. Grading shall meet the requirements of Subsection 202.03 (J).

4.10 COVER SOIL APPLICATION TO GRADED TAILINGS

4.10.1 General

The Contractor shall load the fill material from the placer tailings borrow source, remaining stockpiled soil from the road construction (if any), transport the indicated volume (approximately 8,600 bank cubic yards) to the graded tailings pile, and unload, place and grade the material at a uniform minimum depth of 1.5 feet.

4.10.2 Reference Specifications

The following reference specifications from Standard Specifications for Abandoned Mine Reclamation Construction are hereby made part of this contract.

- Subsection 203: Providing and/or Stockpiling Backfill Materials;
- Subsection 206: Haul;
- Subsection 310: Cover Soil;
- Subsection 540: Provide Water; and
- Subsection 550: Traffic Control.

4.10.3 Materials

Materials shall meet all requirements found within the referenced Standard Specifications.

4.10.4 Execution

The general construction sequence for "Cover Soil Application to Graded Tailings Piles" includes, but is not necessarily limited to the following:

- Providing traffic control at the road crossing from the placer tailings borrow source;
- Loading remaining stockpiled soil from the road construction cut (if any);
- Removing and stockpiling vegetation and topsoil from placer tailings borrow source for later replacement;
- Loading additional cover soil from the placer tailings borrow source onto haul trucks, as necessary;
- Transporting cover soil to the graded tailings areas;
- Unloading cover soil onto the graded tailings areas; and
- Placing and grading cover soil (including stockpiled topsoil) on the graded tailings areas to a minimum depth of 1.5 foot. The cover soil shall be applied loose, not compacted.

4.11 FERTILIZE AND SEED

4.11.1 General

The Contractor shall fertilize and seed all areas at the site disturbed due to the execution of the work. Approximately 150 pounds of fertilizer per acre shall be applied to all disturbed areas; and according to the seed mixtures specified in the Special Provisions, the seed mixes shall be applied to the following areas at the indicated rates:

Tailings Facilities	18 pounds per acre (drill seeding)
Other Facilities	36 pounds per acre (hydroseeding or hand broadcasting).

4.11.2 Reference Specifications

The following reference specifications from Standard Specifications for Abandoned Mine Reclamation Construction are hereby made part of this contract.

- Subsection 320: Fertilizing and Seeding

4.11.3 Materials

Materials shall meet all requirements found within the referenced Standard Specifications.

4.11.4 Execution

The general construction sequence for Fertilize and Seed includes, but is not necessarily limited to the following:

- Preparing the seed beds as specified in the Standard Specifications;
- Incorporating fertilizer to the prepared seed beds; and
- Applying the seed mix (via drill application where possible) as specified in the Standard Specifications.

4.12 MULCH

4.12.1 General

The Contractor shall mulch all fertilized and seeded areas at the site. Vegetative mulch (straw - certified weed free) shall be applied to the all reclaimed tailings areas at a rate of 3,000 pounds per acre. Hydromulch shall be applied to 2.5:1 or steeper slopes at a rate of 2,000 pounds per acre.

4.12.2 Reference Specifications

The following reference specifications from Standard Specifications for Abandoned Mine Reclamation Construction are hereby made part of this contract.

- Subsection 330: Mulch

4.12.3 Materials

Materials shall meet all requirements found within the referenced Standard Specifications.

4.12.4 Execution

The general construction sequence for Mulch includes, but is not necessarily limited to the following:

- Covering specified areas with mulch or hydromulch/tackifier as required by the Standard Specifications;
- Applying tackifier to hydromulched areas as required by the Standard Specifications. Hydromulch and tackifier shall be mixed and applied concurrently to reduce working on steep slopes;
- Finishing mulched areas; and

- Executing summer erosion control procedure.

4.13 INSTALL EROSION CONTROL MAT

4.13.1 General

The Contractor shall install 580 square yards of erosion control mat in the runon control ditches described in Section 4.6 of these specifications. The installation shall include proper anchoring and stapling procedures as shown on the Drawings.

4.13.2 Reference Specifications

The following reference specifications from Standard Specifications for Abandoned Mine Reclamation Construction are hereby made part of this contract.

- Subsection 340: Erosion Control Mat

4.13.3 Materials

Materials shall meet the requirements specified in the Standard Specifications as well as the following requirements:

Erosion control mat required shall be machine-produced mat consisting of 100% agricultural straw. The mat shall be covered on the top side with lightweight photodegradable polypropylene netting weighing approximate 1.64 pounds per square foot. The mat shall be sewn together on 1.5" centers with biodegradable thread.

Straw erosion control mat shall have the following properties:

Material Content

Straw	100% (0.5 lb/sq. yd.)
Netting	Top side lightweight photodegradable (1.64 lb/1,000 sq. ft. approx. wt.)
Stitch	Biodegradable thread

Physical Specifications (Roll)

Width	6.5 feet
Length	83.5 feet
Weight	30 lbs ± 10%
Area	60 sq. yds.
Stitch Spacing	1.5" or > 50 per 6.5' roll width

Straw erosion control mat shall be the product "S75" as manufactured by North American Green, Evansville, Indiana, or equivalent. The staple pattern shall be 1.2 staples per square yard (the staple pattern is indicated on the Drawings), using 6-inch, 9-gauge wire "U" staples.

4.13.4 Execution

The general construction sequence for Install Erosion Control Mat includes, but is not necessarily limited to the following:

- Prepare soil before installing mats, including application of cover soil, fertilizer and seed;
- Apply erosion control mat onto specified areas;
- Begin at the top of the slope by anchoring the mat in a 6-inch deep x 6-inch wide trench. Backfill and compact the trench after stapling.
- Roll the mat down the slope in the direction of the water flow.
- Full length edge of blankets on the side slopes must be anchored in 6-inch deep x 6-inch wide trench. Backfill and compact the trench after stapling.
- When mats must be spliced down the slope, place mats end over end (shingle style) with approximately 6-inches of overlap. Staple through the overlapped area, approximately 12-inches apart.
- Apply anchoring staples to the mat at the specified frequency; and
- Finishing areas where the mat is applied.

4.14 CONSTRUCT FENCES

4.14.1 General

The Contractor shall construct fences surrounding each of the reclaimed surfaces to allow the establishment of vegetation without interference from livestock. The type of fence shall be 4-strand barbed wire with metal posts. Gates will be constructed as part of the fence enclosures; allowing easy access for personnel and/or equipment for monitoring, maintenance of the reclaimed areas, and selective cattle grazing by the property owner.

4.14.2 Reference Specifications

Reference specifications from the Standard Specifications for Abandoned Mine Reclamation Construction are hereby made part of this contract.

- Subsection 520.00: Farm Fence (Type F-4M).

4.14.3 Materials

Fencing materials shall meet all requirements found within the referenced Standard Specifications.

4.14.4 Execution

The general construction sequence for Construct Fences includes, but is not necessarily limited to the following:

- Providing grading and clearing necessary to efficiently and properly construct the fences (approximately 1,850 lineal feet total);

- Installing metal posts in accordance with dimensions and spacing indicated in the Standard Specifications;

- Securely fastening barbed wire to the metal posts as specified;

- Installing deadmen as specified;

- Installing fence corner panels and brace panels as specified;

- Upon completion, the fence shall be true to line and grade, all posts shall be vertical and firm, all wire shall be taut, and the completed fence shall be acceptable in all respects. No openings shall be left that will permit livestock to pass through the fences.

4.15 OBLITERATE AND RECLAIM ROADWAYS

4.15.1 General

The Contractor shall obliterate roadways after the reclamation activities are completed at the site. Sections of the roadways shall be obliterated where shown on the Drawings; additionally, any short road spurs constructed to access tailings pile, borrow sources or other work areas shall be obliterated and reclaimed. The natural drainage pattern shall be restored or maintained or both. The roadbed shall be ripped, plowed, or scarified to promote the establishment of vegetation, and the slopes shall be rounded to approximate the original contour.

4.15.2 Reference Specifications

Reference specifications from the Standard Specifications for Abandoned Mine Reclamation Construction are hereby made part of this contract.

- Subsection 202: Excavation and Embankment;

- Subsection 320: Fertilizing and Seeding; and

- Subsection 330: Mulch.

4.15.3 Materials

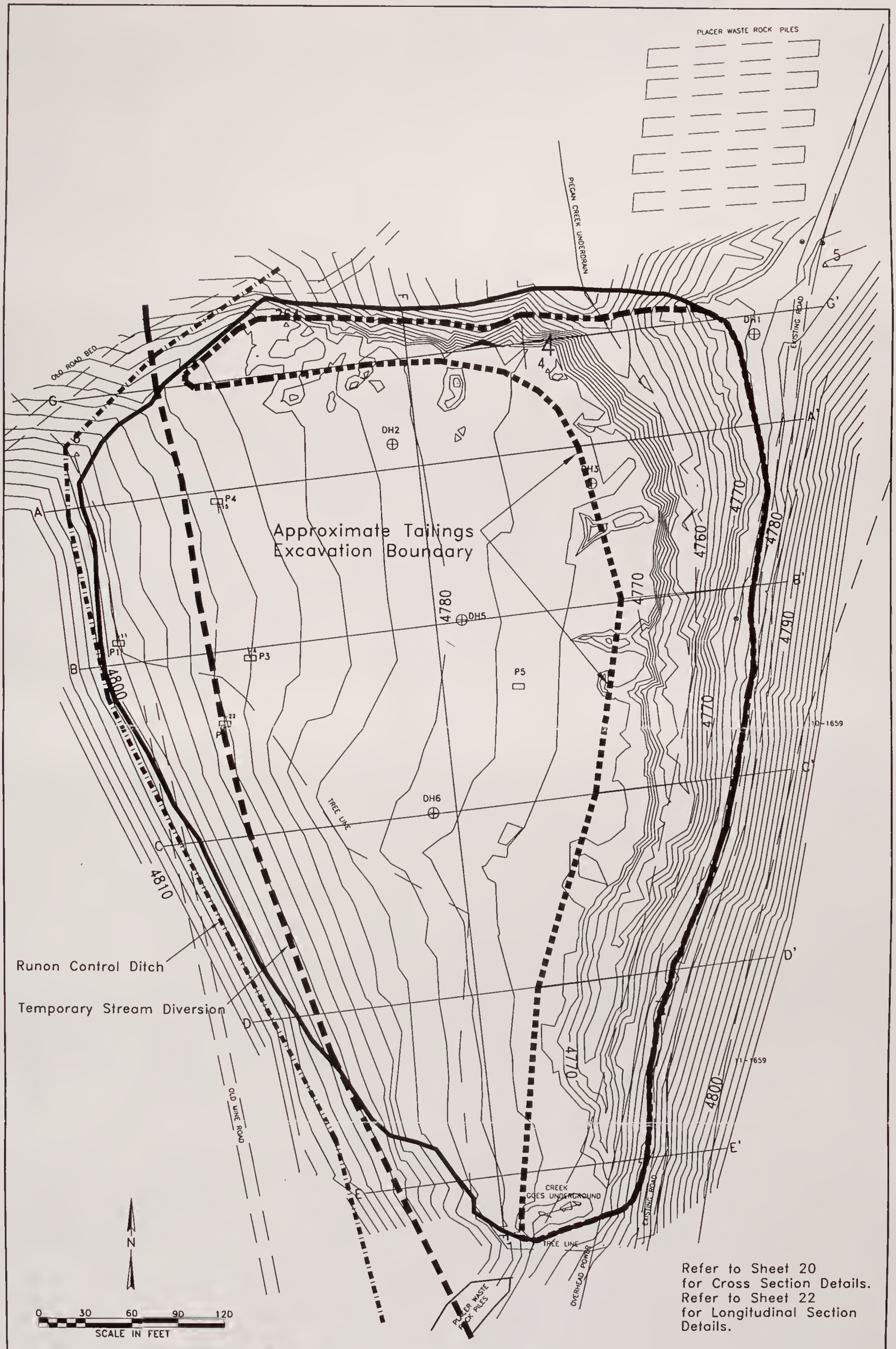
Materials shall meet all requirements found within the referenced Standard Specifications.

4.15.4 Execution

The obliteration of roadways or other designated areas shall consist of rough grading, ripping or scarifying, and naturalization. The work shall not commence until after the designated sections are no longer needed to serve traffic. The general construction sequence for "Obliterate and Reclaim Roadways" includes, but is not necessarily limited to the following:

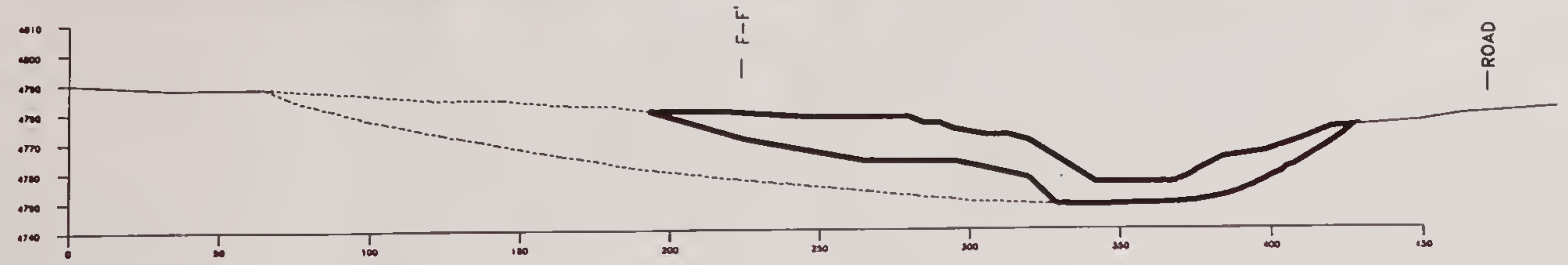
- Rough Grading - Rough grading shall consist of filling the existing ditch and rough sloping of old roadway. When roadways are steep graded (greater than 6%) grading scarification shall be accomplished in such a manner as to provide a roughened surface which will intercept runoff. The roadway shall be mixed and blended with natural soils adjacent to the roadway to present a more natural appearance.

- Ripping - After the rough grading has been completed, the area of the roadway shall then be ripped, scarified or plowed to a minimum depth of 12 inches and maximum of 16 inch intervals and left in a roughened condition suitable for reseeding to achieve revegetation.
- Naturalization - Provide a finished product that as nearly mirrors the surrounding terrain and vegetation as is practicable. This shall be achieved by fertilizing, seeding, and mulching and placement of logs, rocks or other materials (windrowed construction slash) to help mimic the natural surroundings.

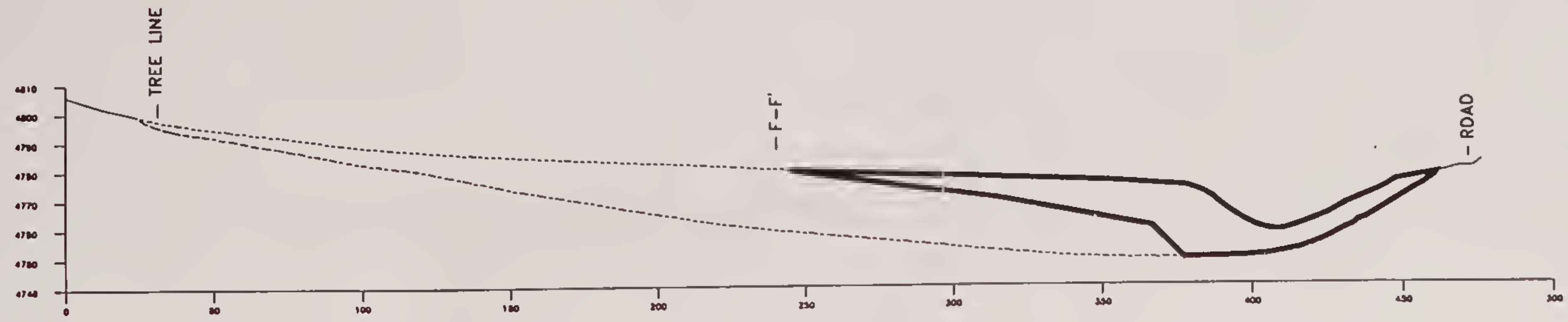


Refer to Sheet 20 for Cross Section Details.
Refer to Sheet 22 for Longitudinal Section Details.

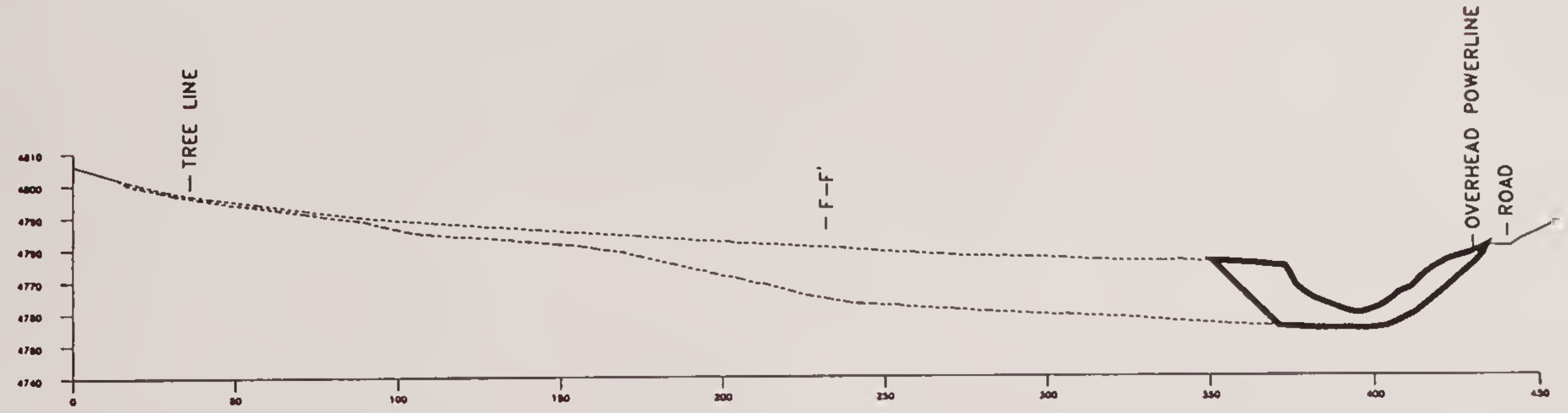
OLYMPUS ENVIRONMENTAL, INC.	TAILINGS EXCAVATION PLAN VIEW MAP (TP3)	Design: DGW	Drawn: DGW	SHEET
	PIEGAN-GLOSTER MILLSITE	Checked: KSR	Date: 8/21/96	19
	LEWIS AND CLARK COUNTY MONTANA	Approved: KSR	Revision / By / Date	
		Job No: 95-5760		
		CAD File: tp3_plan		
		Scale: AS SHOWN		



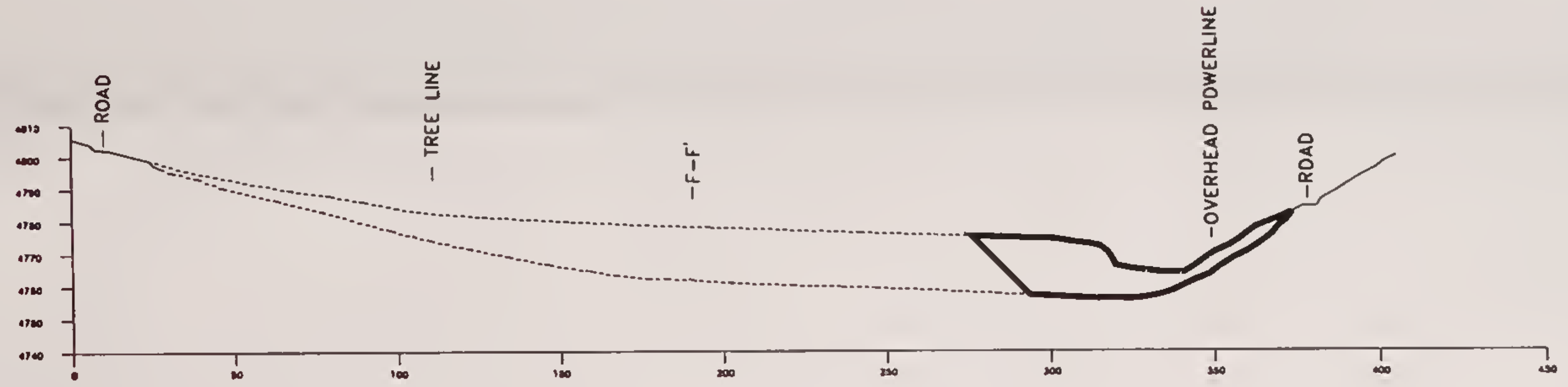
CROSS SECTION G–G'



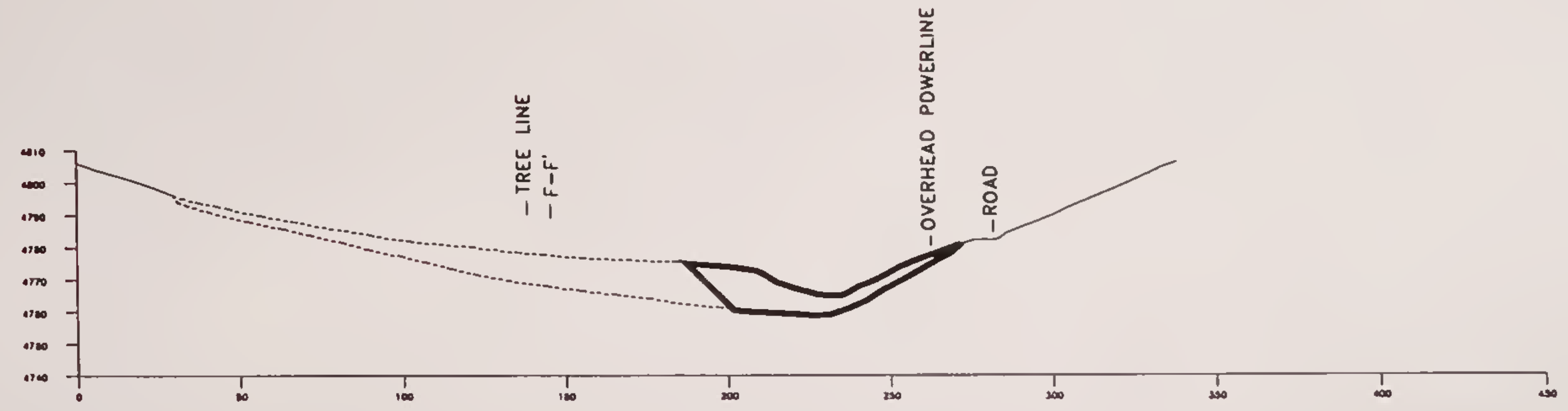
CROSS SECTION A–A'



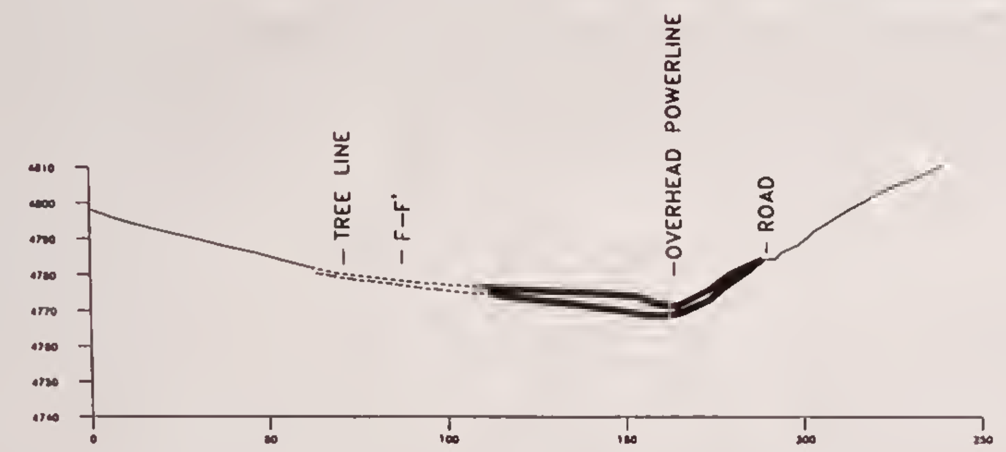
CROSS SECTION B–B'



CROSS SECTION C–C'



CROSS SECTION D–D'



CROSS SECTION E–E'

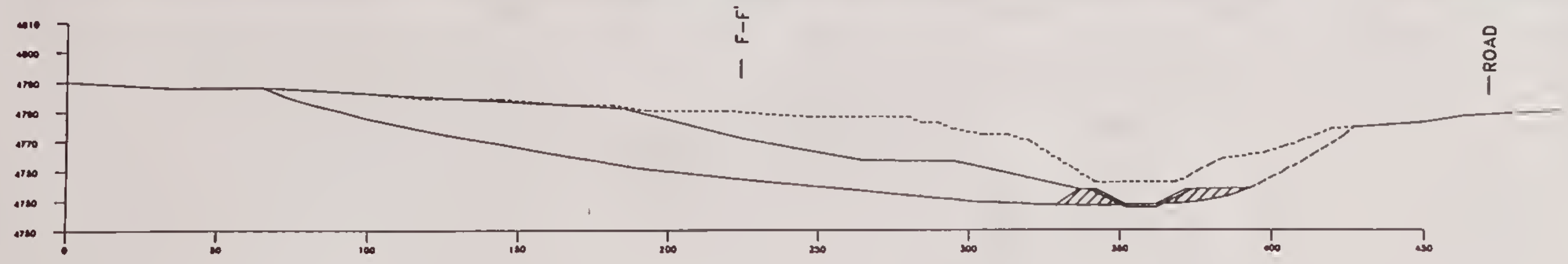
LEGEND

REFER TO SHT 19
FOR SECTION
LOCATIONS

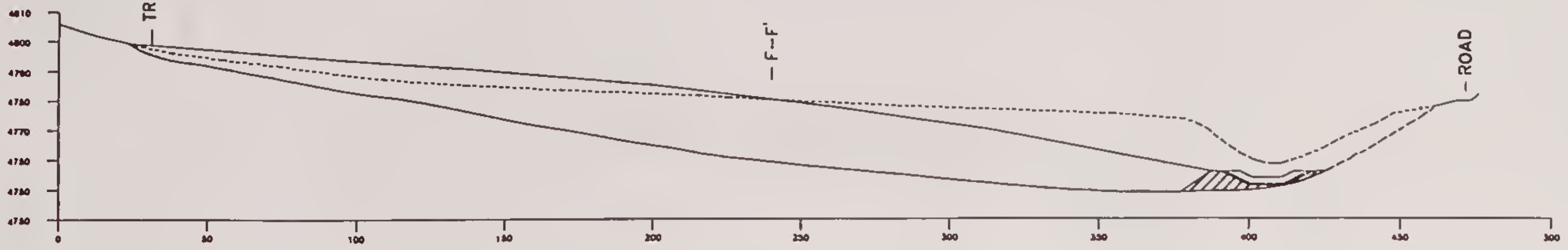
OLYMPUS
ENVIRONMENTAL, INC.

TAILINGS REMOVAL
SECTIONS (TP-3)
PIEGAN-GLOSTER MILLSITE
LEWIS AND CLARK COUNTY
MONTANA

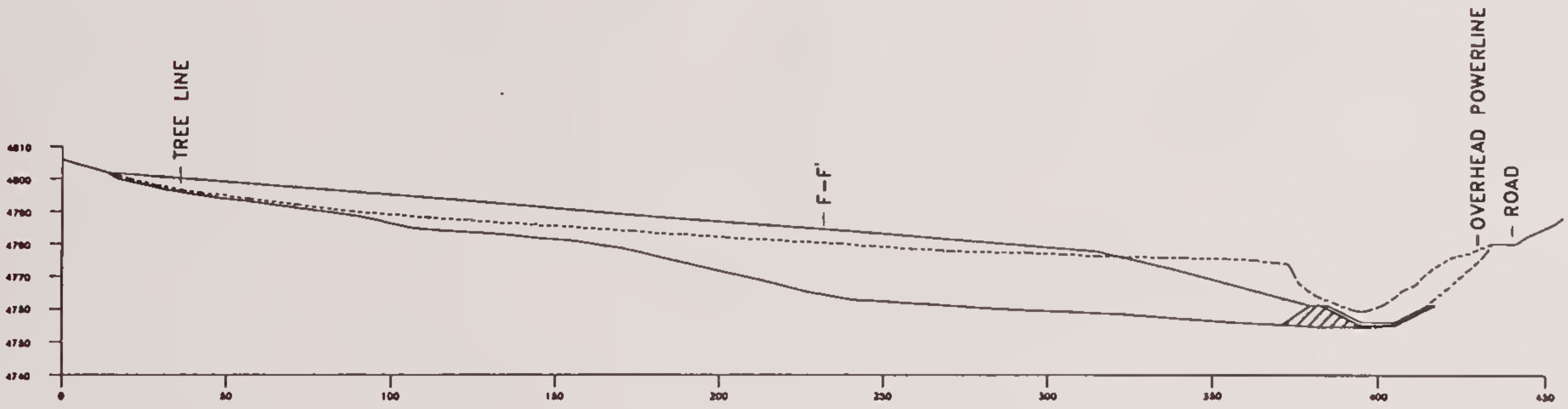
Design: KSR	Drawn: DGW			SHEET
Checked: DGW	Date: 8/21/96			
Approved: KSR	Revision	By	Date	20
Job No: 95-576D				
CAD File: tp3_remov				
Scale: AS SHOWN				



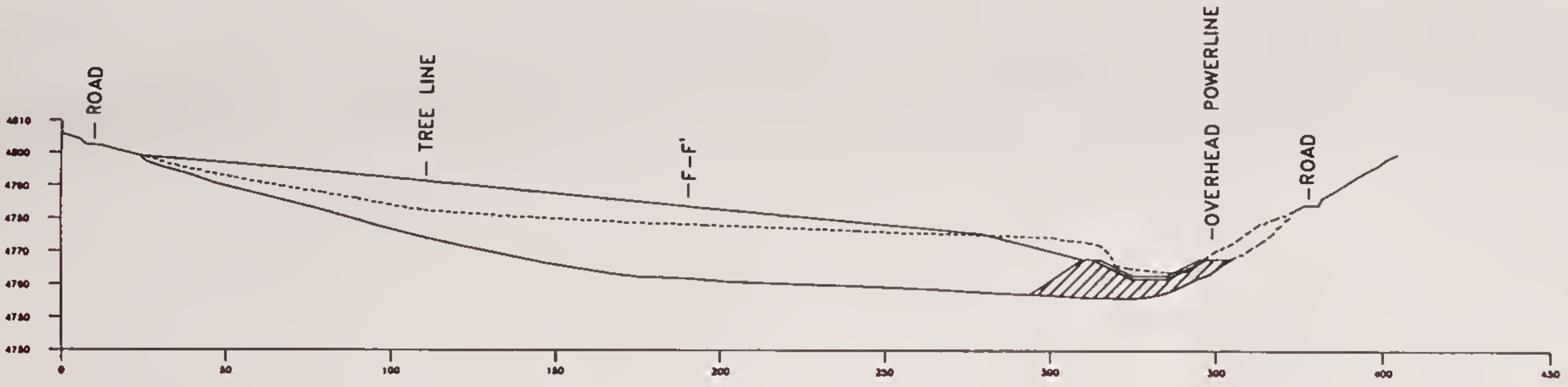
CROSS SECTION G–G'



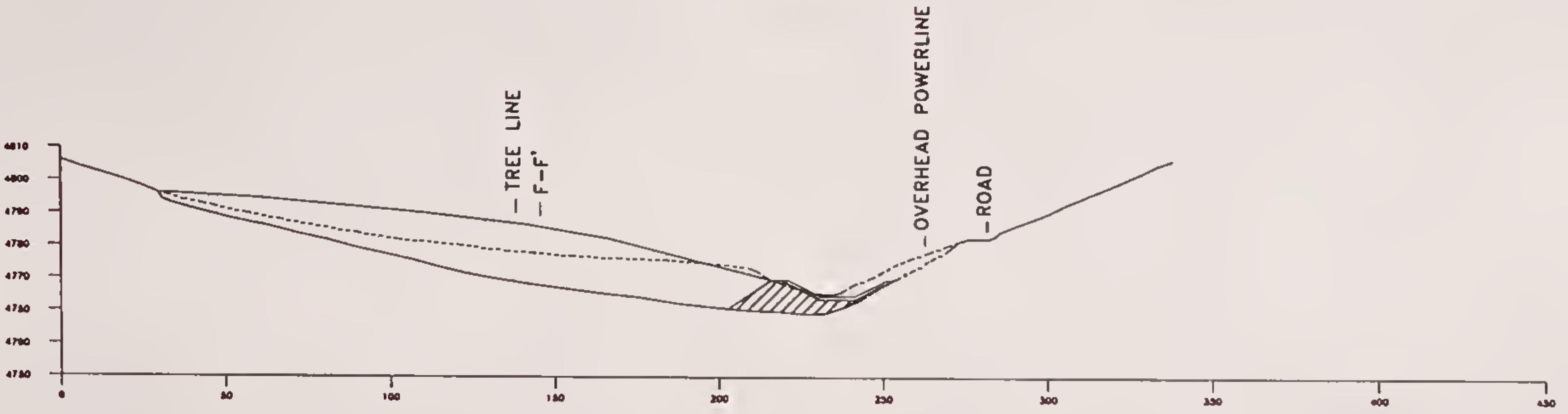
CROSS SECTION A–A'



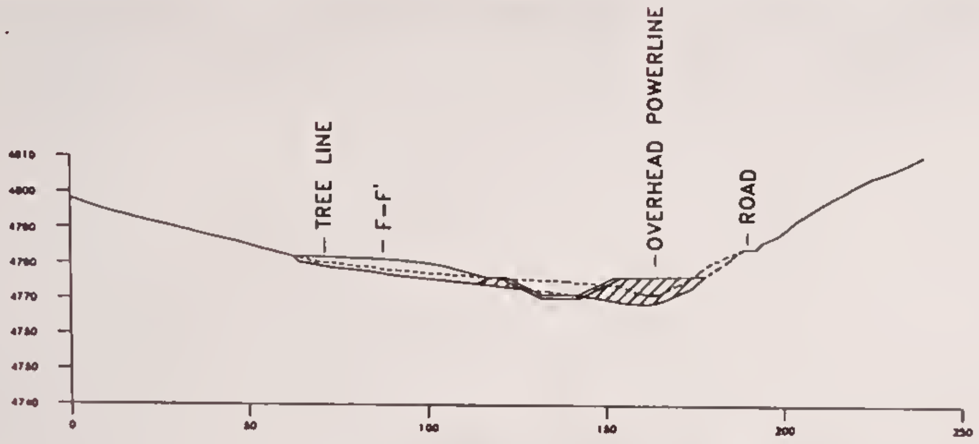
CROSS SECTION B–B'



CROSS SECTION C–C'



CROSS SECTION D–D'



CROSS SECTION E–E'

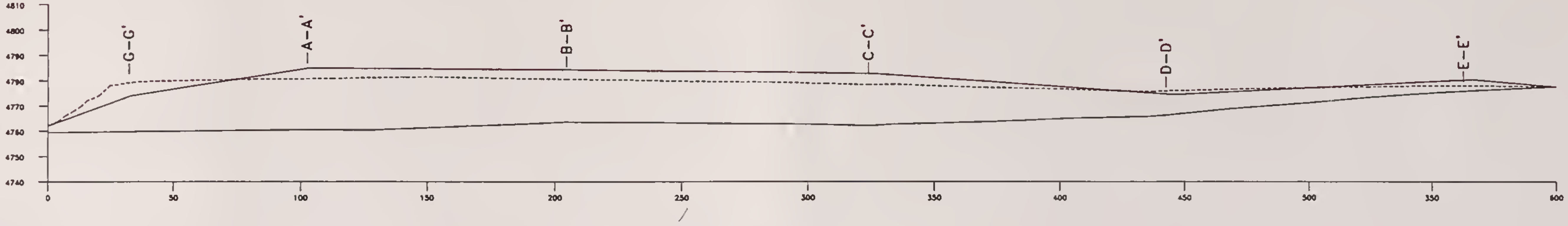
LEGEND

- ┈┈┈ Pre-Reclamation Tailings Surface
- ▨ Backfill Material & Channel Cut
- ▭ Reclaimed Tailings

REFER TO SHT 19
FOR SECTION
LOCATIONS

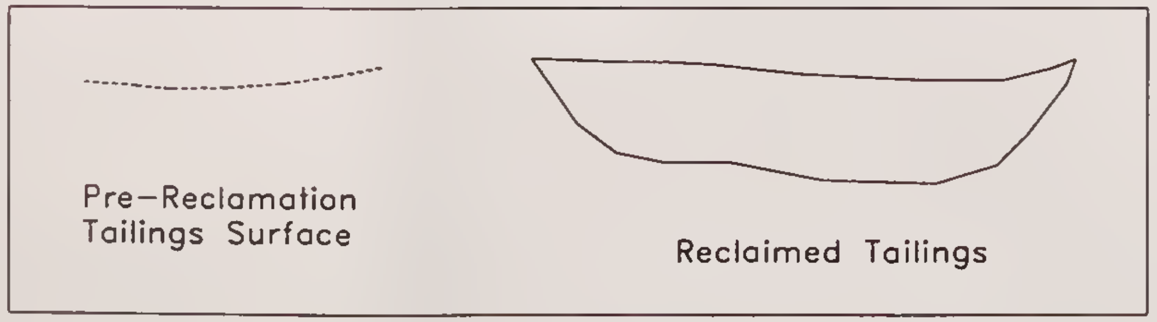
OLYMPUS
ENVIRONMENTAL, INC.

BACKFILL & TAILINGS GRADING SECTIONS (TP–3)	Design: KSR	Drawn: DGW		SHEET
PIEGAN–GLOSTER MILLSITE	Checked: DGW	Date: 8/21/96		
LEWIS AND CLARK COUNTY MONTANA	Approved: KSR	Revision	By	Date
	Job No: 95–5760			21
	CAD File: tp3_chan			
	Scale: AS SHOWN			



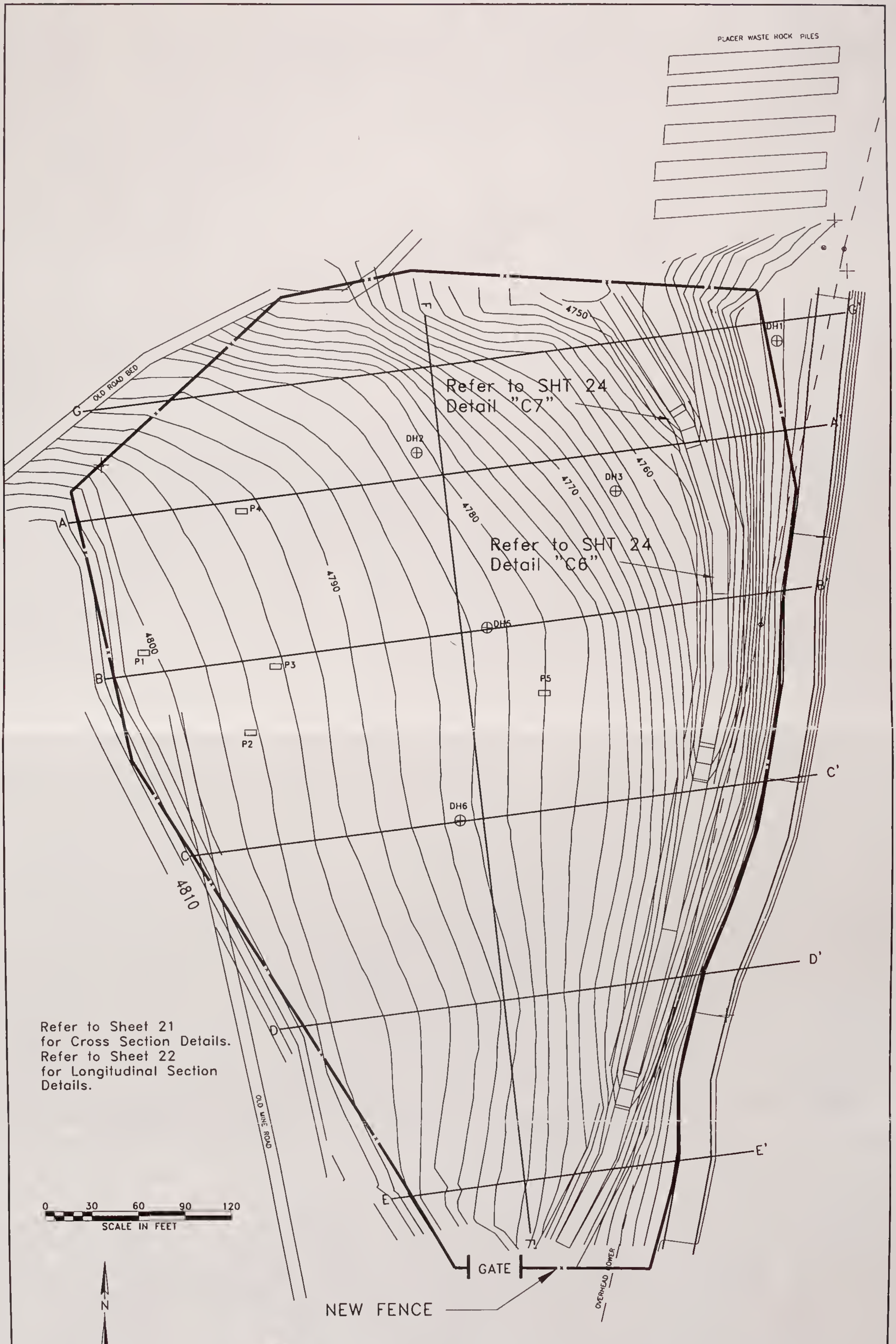
LONGITUDINAL SECTION F–F'

LEGEND



Refer to SHT 19
for Section Locations

OLYMPUS ENVIRONMENTAL, INC.	TP3 GRADING LONGITUDINAL SECTION	Design: DGW	Drown: DGW			FIGURE
	PIEGAN–GLOSTER MILLSITE	Checked: KSR	Dote: 6/15/96			
	LEWIS AND CLARK COUNTY MONTANA	Approved: KSR	Revision	By	Dote	22
		Job No: 95–5760				
		CAD File: tp3_long				
		Scole: AS SHOWN				

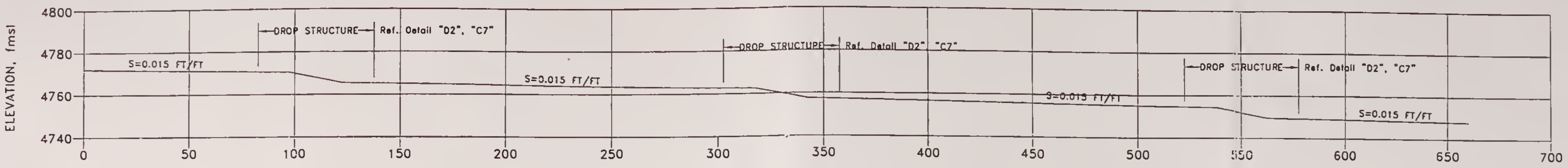


Refer to SHT 24 Detail "C7"

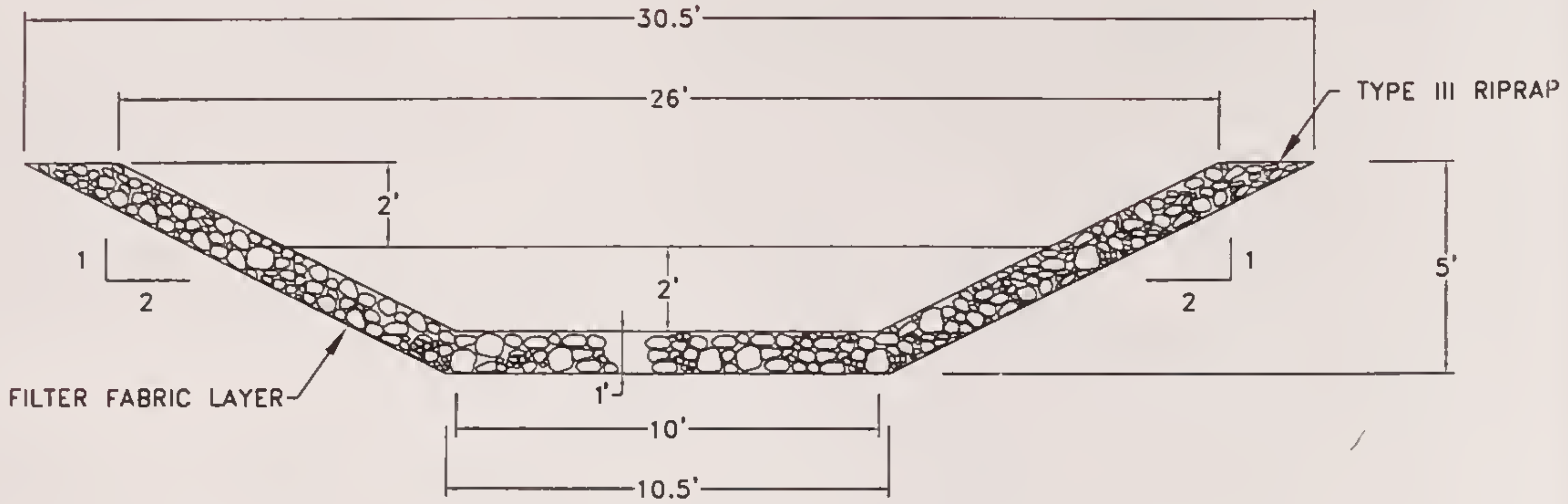
Refer to SHT 24 Detail "C6"

Refer to Sheet 21 for Cross Section Details.
Refer to Sheet 22 for Longitudinal Section Details.

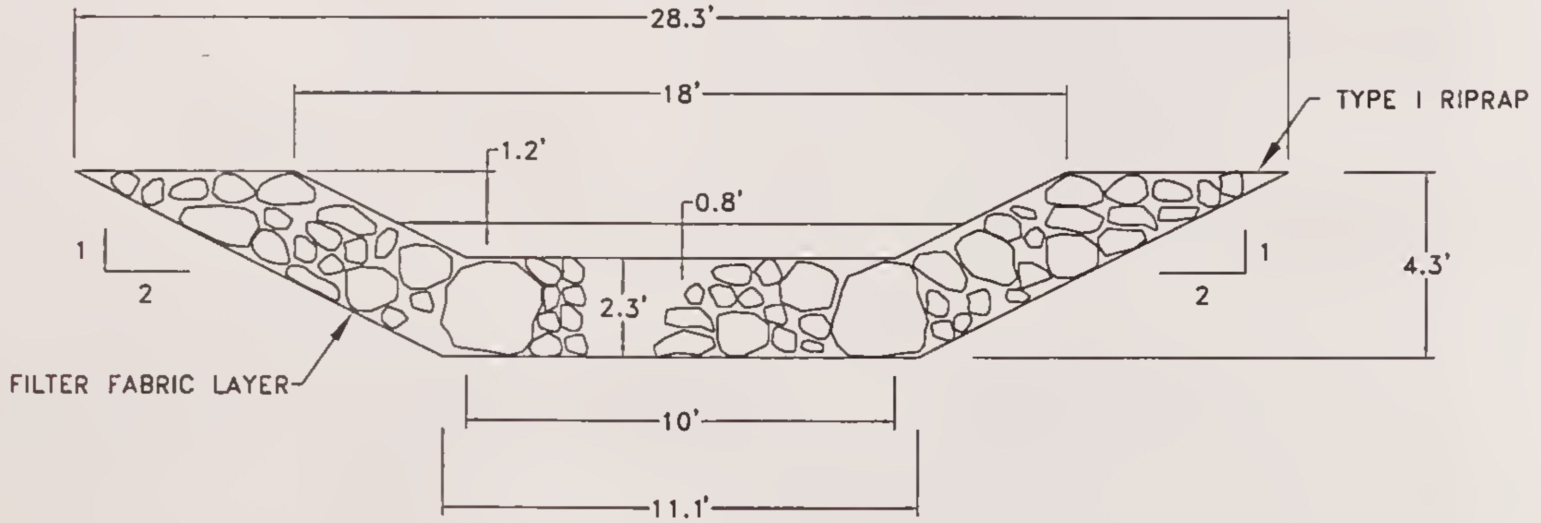
OLYMPUS ENVIRONMENTAL, INC.	TAILINGS PILE 3 GRADING AND FENCING PLAN PIEGAN-GLOSTER MILLSITE Lewis and Clark County Montana	Design: KSR Checked: DGW Approved: KSR Job No: 95-5760 CAD File: TP3_new Scale: AS SHOWN	Drawn: DGW Date: 4/12/96 Revision By Date	SHEET 23



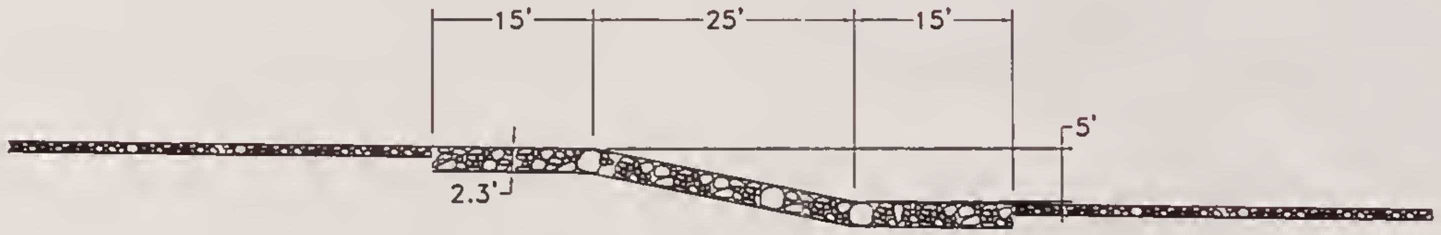
TP-3 CHANNEL ℄ PROFILE (Ref. Sheet 23 for Channel Location)



TP-3 MAIN CHANNEL
DETAIL "C6"



TP-3 DROP STRUCTURE
DETAIL "C7"



TP-3 DROP STRUCTURE PROFILE DETAIL
DETAIL "D2"

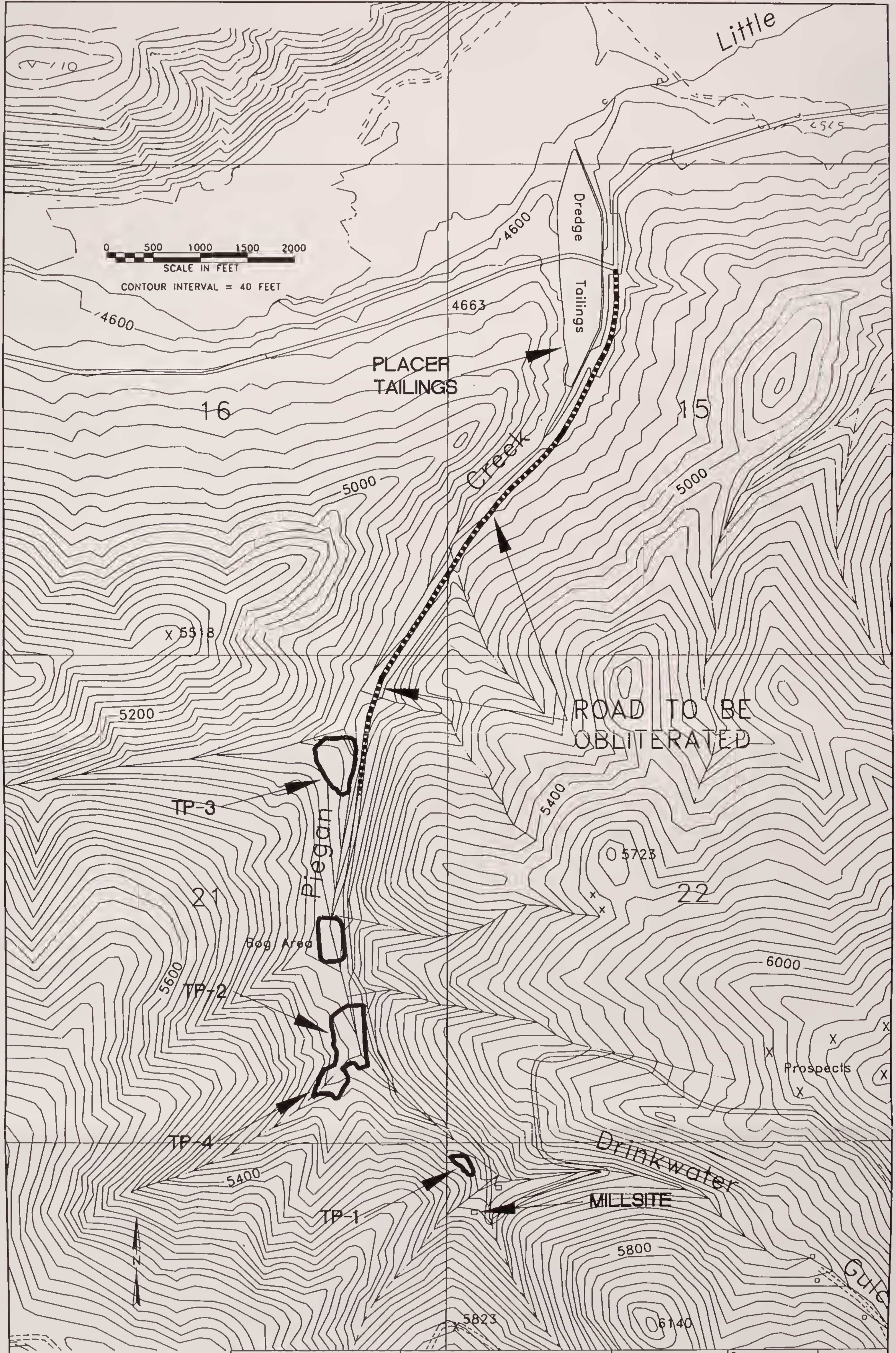
OLYMPUS
ENVIRONMENTAL, INC.

STREAM CHANNEL
DETAILS (TP-3)

PIEGAN-GLOSTER MILLSITE

LEWIS AND CLARK COUNTY
MONTANA

Design: KSR	Drawn: KSR				SHEET
Checked: DGW	Date: 8/21/96				
Approved: KSR	Revision	By	Date		24
Job No: 95-5760					
CAD File: TP3CHAN					
Scale: AS SHOWN					



SOURCE: USGS QUADS
CANYON CREEK, MONT
GRANITE BUTTE, MONT

OLYMPUS
ENVIRONMENTAL, INC.

ROAD OBLITERATION
PLAN (TP3)

PIEGAN-GLOSTER MILLSITE
Lewis and Clark County
Montana

Design: OGW	Drawn: OGW			SHEET
Checked: KSR	Date: 6/17/96			
Approved: KSR	Revision	By	Date	
Job No: 95-5760	1	OW	8/96	25
CAD File: obliterate				
Scale: AS SHOWN				

CHANGE ORDER

ORDER NO. 3

PROJECT TITLE: Piegan-Gloster Millsite Reclamation Project

DEQ-AMRB No.: 95-002

CONTRACT DATE: August 7, 1996

OWNER: Montana Department of Environmental Quality-Abandoned Mine Reclamation Bureau

CONTRACTOR: MK Weeden Construction, Inc.

Change Orders must be accompanied by an itemized cost breakdown. You are hereby requested to comply with the following changes from the Contract Documents. (Show separate costs for materials, labor, equipment, and miscellaneous. Show percent where applicable.)

ITEM NO.	DESCRIPTION OF CHANGES-ESTIMATED QUANTITIES & UNITS	COST OF CHANGES					TOTAL COST
		MATL'S	LABOR	EQUIP.	MISC.	TOTAL UNIT COST	
5	Contractor repurchase and salvage of temporary diversion pipe (1,000 ft)					$3.75	($3,750)
	TOTAL COST - MATERIALS, LABOR, EQUIPMENT & MISC.						($3.750)
	OVERHEAD & PROFIT@ -0-%						-0-
	GRAND TOTAL - THIS CHANGE ORDER						($3.750)

Original Contract Price	$288.510.00
Current Contract Price Adjusted by Previous Change Order	$632.475.50
Cost this Change Order (+ or -_)	-$3.750.00
New Contract Price including this Change Order	$628.725..50

The completion date as set forth in the Contract Documents shall be ([✓ unchanged], increased, decreased) by 0 calendar days.

The date for completion of all work will be December 14, 1996.

Description and Justification for Change:

1. The contractor will repurchase and salvage the 1,000 feet of diversion pipe at a price of $3.75 per foot. This change order deducts the repurchase price ($3,750) from the contract price.

SURETY CONSENT

The Surety hereby consents to the aforementioned Contract Change Order and agrees that its bond or bonds shall apply and extend to the Contract as thereby modified or amended per this Change Order. The Principal and the Surety further agree that on or after execution of this consent, the penalty of the applicable Performance Bonds or Bonds is hereby increased by $ ($3,750.00) (100% of the Change Order amount) and the penalty of the applicable Labor and Material Bond or Bonds is hereby increased by $ ($3,750.00) (100% of the Change Order amount).

COUNTERSIGNED BY MONTANA RESIDENT AGENT	SURETY
GORDON D. MCMANUS	FIRST NATIONAL INSURANCE COMPANY OF AMERICA
FLYNN INSURANCE AGENCY	By:
BOX 711 GREAT FALLS, MT 59403	JOHN D. LEAF Seal ATTORNEY-IN-FACT

Recommended by: ______ Engineer — 10-3-96 Date

Accepted by: ______ Contractor — 10/22/96 Date

Approved by: ______ Owner — 10/29/96 Date

RECEIVED NOV 2 7 1996

CHANGE ORDER

ORDER NO. 4

PROJECT TITLE: Piegan-Gloster Millsite Reclamation Project

DEQ-AMRB No.: 95-002

CONTRACT DATE: August 7. 1996

OWNER: Montana Department of Environmental Quality-Abandoned Mine Reclamation Bureau

CONTRACTOR: MK Weeden Construction. Inc.

Change Orders must be accompanied by an itemized cost breakdown. You are hereby requested to comply with the following changes from the Contract Documents. (Show separate costs for materials, labor, equipment, and miscellaneous. Show percent where applicable.)

ITEM NO.	DESCRIPTION OF CHANGES-ESTIMATED QUANTITIES & UNITS	COST OF CHANGES					TOTAL COST
		MATL'S	LABOR	EQUIP.	MISC.	TOTAL UNIT COST	
11	Additional fertilizing and seeding (10.2 ac)					$450.00	$4,590.00
12	Additional mulching (5.0 ac)					$450.00	$2,250.00
14	Deduct fence construction (550 ft)					$1.15	($632.50)
14	Additional fence construction (2,500 ft)					$1.60	$4,000.00
16	Deduct 100 straw bales					$9.00	($900.00)
16	Decuct 100 ft silt fence					$1.00	($1000.00)

TOTAL COST - MATERIALS, LABOR, EQUIPMENT & MISC.	$8.307.50
OVERHEAD & PROFIT@ -0-%	-0-
GRAND TOTAL - THIS CHANGE ORDER	$8.307.50

Original Contract Price	$288.510.00
Current Contract Price Adjusted by Previous Change Order	$628.725.50
Cost this Change Order (+ or -)	+$8.307.50
New Contract Price including this Change Order	$637.033.00

The completion date as set forth in the Contract Documents shall be (unchanged, increased, decreased) by 0 calendar days.

The date for completion of all work will be December 14, 1996 .

Description and Justification for Change:

1. Adjustments for changes in actual quantity bid items.

2. The increased unit cost for fencing ($1.60) is to compensate for installing a portion of the fence in an area with shallow bedrock.

SURETY CONSENT

The Surety hereby consents to the aforementioned Contract Change Order and agrees that its bond or bonds shall apply and extend to the Contract as thereby modified or amended per this Change Order. The Principal and the Surety further agree that on or after execution of this consent, the penalty of the applicable Performance Bonds or Bonds is hereby increased by $ 8,307.50 (100% of the Change Order amount) and the penalty of the applicable Labor and Material Bond or Bonds is hereby increased by $ 8,307.50 (100% of the Change Order amount).

COUNTERSIGNED BY MONTANA
RESIDENT AGENT
Gordon D McManus (bl)
GORDON D. MCMANUS
FLYNN INSURANCE AGENCY
BOX 711, GREAT FALLS, MT 59403

SURETY
FIRST NATIONAL INSURANCE COMPANY OF AMERICA
By:
JOHN D. LEAF Seal ATTORNEY-IN-FACT

Recommended by: Kevin S Pauch, Olympus Env. Science + Engineering 11-13-96
Engineer Date

Accepted by: 11/18/96
Contractor Date

Approved by: Vic R Andersen 11-25-96
Owner Date

APPENDIX E

PAYMENT REQUEST FORMS

RECEIVED FEB 0 7 1997

PAYMENT REQUEST NO. 1

FROM 7/5/96 TO 8/29/96

PROJECT TITLE: Piegan-Gloster Millsite Reclamation Project

LOCATION: Piegan Creek DEQ-AMRB NO.: 95-002

NAME OF CONTRACTOR: MK Weeden Construction, Inc.

ADDRESS: P.O. Box 1164, Lewistown, MT 59457

SUMMARY OF PROJECT STATUS

Amount of Original Contract		$288,510.00
Change Order No. ____	$____	
Change Order No. ____	$____	
Change Order No. ____	$____	
Amount of Approved Change Order(s)		$0.00
TOTAL CONTRACT AMOUNT		$288,510.00

Pay Request No.	Amount of Request
1	194,856.00

Total Contract Amount Completed to Date	$194,856.00
Less Retainage (10%)	$19,485.60
TOTAL AMOUNT EARNED TO DATE	$175,370.40
Less Previous Payments	$0.00
AMOUNT DUE THIS PAYMENT	$175,370.40
Less 1% Tax	$1,753.70
TOTAL DUE CONTRACTOR	$173,616.70

ok 8/4/96

I certify that this claim is correct and just in all respects and that payment or credit has not been received.

MK Weeden Construction, Inc.
Contractor

By Marty Weeden

Date 9/3/96

RECOMMENDED BY:

Olympus Environmental Science and Engineering, Inc.
Engineer

By Kim S. Lovel

Date 9-3-96

APPROVED BY:

Department of Environmental Quality
Abandoned Mine Reclamation Bureau
Owner

By

Date

RECP. CNTR 45182
COL. EXP. 2102
APPROVAL Vic R Andersen
DATE 9-4-96

Item No.	Description	Contract Quantity	Contract Unit Price	Previous Quantity Requested	Current Quantity Completed	Total Quantity Completed to Date	Total Contract Amount Completed to Date	Amount Due this Payment
1	Mob, Bond, Ins.	1	$34,949	0	1	1	$34,949	$34,949
2	Road Improve	9400	$0.27	0	9400	9400	$2,538	$2,538
3	Clear & Grub	1	$2,700	0	1	1	$2,700	$2,700
4	Mill Removal	1	$3,150	0	1	1	$3,150	$3,150
5	Temp Diversion	1	$4,245	0	1	1	$4,245	$4,245
6	Runon Control	1,600	$0.96	0	1,100	1,100	$1,056	$1,056
7	Exc. Mine Wst..	48,800	$1.50	0	48,800	48,800	$73,200	$73,200
8	Backfill	13,400	$5.00	0	13,400	13,400	$67,000	$67,000
9	Mine Wst Grade	48,800	$0.11	0	48,800	$5,368	$5,368	$5368
16	Storm Water	1	$650	0	1	1	$650	$650
	Materials on Site (Attach Schedule)	–	–	$	$	–	$	$
	TOTALS						$194,856	$194,856

PAYMENT REQUEST NO. 2

FROM 8/30/96 TO 10/23/96

PROJECT TITLE: Piegan-Gloster Millsite Reclamation Project
LOCATION: Piegan Creek DEQ-AMRB NO.: 95-002
NAME OF CONTRACTOR: MK Weeden Construction, Inc
ADDRESS: P.O. Box 1164, Lewistown, MT 59457

SUMMARY OF PROJECT STATUS

Amount of Original Contract		$288,510.00
Change Order No. 1	$18,176.00	
Change Order No. 2	$325,789.50	
Change Order No. ___	$	
Amount of Approved Change Order(s)		$343,965.50
TOTAL CONTRACT AMOUNT		$632,475.50

Pay Request No.	Amount of Request
1	$194,856.00
2	$433,142

Total Contract Amount Completed to Date	$627,998.00
Less Retainage (10%)	$62,799.80
TOTAL AMOUNT EARNED TO DATE	$565,198.20
Less Previous Payments	$173,616.70
AMOUNT DUE THIS PAYMENT	$391,581.50
Less 1% Tax	$3,915.82
Refund TP-2 / TP-4 10% Retainage	$19,485.60
TOTAL DUE CONTRACTOR	**$407,151.29**

ok
10/24/96

I certify that this claim is correct and just in all respects and that payment or credit has not been received.

MK Weeden Construction, Inc.
Contractor
By Marty Weeden
Date 10/23/96

RECOMMENDED BY:

Olympus Environmental Science and Engineering, Inc.
Engineer
By
Date 10-23-96

APPROVED BY:

Department of Environmental Quality,
Abandoned Mine Reclamation Bureau
Owner
By John Koerth
Date 10/24/96

Item No.	Description	Contract Quantity	Contract Unit Price	Previous Quantity Requested	Current Quantity Completed	Total Quantity Completed to Date	Total Contract Amount Completed to Date	Amount Due this Payment
	TP-2 / TP-4							
1	Mob, Bond,	1	$34,949	1	1	1	$34,949	0
2	Road Improve	9400	$0.27	9,400	9,400	9,400	$2,538	0
3	Clear & Grub	1	$2,700	1	1	1	$2,700	0
4	Mill Removal	1	$3,150	1	1	1	$3,150	0
5	Temp	1	$4,245	1	1	1	$4,245	0
6	Runon Control	1,600	$0.96	1,100	1,600	1,600	$1,536	$480
7	Exc. Mine	48,800	$1.50	48,800	48,800	48,800	$73,200	0
8	Backfill	13,400	$5.00	13,400	13,400	13,400	$67,000	0
8	Filter Fabric	5,000	$1.80	0	5,000	5,000	$9,000	$9,000
8	Type 1 Riprap	540	$28.50	0	540	540	$15,390	$15,390
8	Type 2 Riprap	1,060	$28.50	0	1,060	1,060	$30,210	$30,210
9	Mine Wst	48,800	$0.11	48,800	48,800	$5,368	$5,368	0
10	Cover Soil	13,500	$2.80	0	13,500	13,500	$37,800	$37,800
11	Fert. and	10.5	$450	0	10.5	10.5	$4,725	$4,725
12	Mulch	10.5	$450	0	9.5	9.5	$4,275	$4,275
13	Erosion Mat	1,150	$1.00	0	1,150	1,150	$1,150	$1,150
14	Const. Fence	3,000	$1.15	0	3,000	3,000	$3,450	$3,450
15	Obliterate	3,000	$1.00	0	3,000	3,000	$3,000	$3,000
16	Storm Water	1	$650	~~0~~ 1	1	1	$650	~~$650~~ 0
							TOTAL	$109,480
	TP-3							
3	Clear & Grub	1	$9,379	0	1	1	$9,379	$9,379
5	Temp	1	$117,135	0	1	1	$117,135	$117,135
6	Runon Control	800	$1.00	0	800	800	$800	$800
7	Exc. Mine	21,000	$3.00	0	21,000	21,000	$63,000	$63,000
8	Backfill	4,100	$5.85	0	4,100	4,100	$23,985	$23,985
8	Filter Fabric	2,550	$1.80	0	2,550	2,550	$4,590	$4,590
8	Type 1 Riprap	350	$36.50	0	350	350	$12,775	$12,775
8	Type 2 Riprap	500	$36.50	0	500	500	$18,250	$18,250
8	Plug	1	$1,680	0	1	1	$1,680	$1,680
9	Mine Wst	21,000	$1.25	0	21,000	21,000	$26,250	$26,250
10	Cover Soil	8,600	$3.73	0	8,600	8,600	$32,078	$32,078
11	Fert. and	7.4	$450	0	7.4	7.4	$3,330	$3,330
12	Mulch	7.4	$450	0	7.4	7.4	$3,330	$3,330
13	Erosion Mat	580	$1.00	0	580	580	$580	$580
14	Const. Fence	1,850	$1.15	0	0	0	$0	$0
15	Obliterate	6,500	$1.00	0	6,500	6,500	$6,500	$6,500
							TOTAL	$323,662
	Materials on Site (Attach Schedule)	–	–	$	$	–	$	$
	TOTALS						$627,998	$433,142

CSR

Pd 11-27-
6700052

COPY

PAYMENT REQUEST NO. 3

FROM 10/24/96 TO 10/29/96 [illegible] 26 [illegible]

PROJECT TITLE: Piegan-Gloster Millsite Reclamation Project

LOCATION: Piegan Creek DEQ-AMRB NO.: 95-002

NAME OF CONTRACTOR: MK Weeden Construction, Inc.

ADDRESS: P.O. Box 1164 Lewistown, MT 59457

SUMMARY OF PROJECT STATUS

Amount of Original Contract		$288,510.00
Change Order No. 1	$ $18,176.00	
Change Order No. 2	$ $325,789.50	
Change Order No. 3	$ (3,750.00)	
Change Order No. 4	$ 8,307.50	
Amount of Approved Change Order(s)		$348,523.00
TOTAL CONTRACT AMOUNT		$637,033.00

Pay Request No.	Amount of Request
1	$194,856.00
2	$433,142.00
3	$9,035.00

Total Contract Amount Completed to Date	$637,033.00
Less Retainage (10%)	$0.00
TOTAL AMOUNT EARNED TO DATE	$637,033.00
Less Previous Payments	$580,767.99
AMOUNT DUE THIS PAYMENT	$56,265.01
Less 1% Tax	$562.65
TOTAL DUE CONTRACTOR	$55,702.36

#45182
Joel

I certify that this claim is correct and just in all respects and that payment or credit has not been received.

MK Weeden Construction, Inc.
Contractor

By Marty Weeden

Date 11/18/96

RECOMMENDED BY:

Olympus Environmental Science and Engineering, Inc.
Engineer

By Kevin S. Pauch

Date 11-13-96

APPROVED BY:

Department of Environmental Quality
Abandoned Mine Reclamation Bureau
Owner

By Vic R. Andersen

Date 11-25-96

45182
2102
Vic R. Andersen
11-25-96

Item No.	Description	Contract Quantity	Contract Unit Price	Previous Quantity Requested	Current Quantity Completed	Total Quantity Completed to Date	Total Contract Amount Completed to Date	Amount Due this Payment
	TP-2 / TP-4							
1	Mob, Bond,	1	$34,949	1	1	1	$34,949	0
2	Road Improve	9400	$0.27	9,400	9,400	9,400	$2,538	0
3	Clear & Grub	1	$2,700	1	1	1	$2,700	0
4	Mill Removal	1	$3,150	1	1	1	$3,150	0
5	Temp	1	$4,245	1	1	1	$4,245	0
6	Runon Control	1,600	$0.96	1,100	1,600	1,600	$1,536	0
7	Exc. Mine	48,800	$1.50	48,800	48,800	48,800	$73,200	0
8	Backfill	13,400	$5.00	13,400	13,400	13,400	$67,000	0
8	Filter Fabric	5,000	$1.80	5,000	5,000	5,000	$9,000	0
8	Type 1 Riprap	540	$28.50	540	540	540	$15,390	0
8	Type 2 Riprap	1,060	$28.50	1,060	1,060	1,060	$30,210	0
9	Mine Wst	48,800	$0.11	48,800	48,800	$5,368	$5,368	0
10	Cover Soil	13,500	$2.80	13.500	13,500	13,500	$37,800	0
11	Fert. and	12.5	$450	10.5	12.5	12.5	$5,625	$900
12	Mulch	10.5	$450	9.5	9.5	9.5	$4,275	0
13	Erosion Mat	1,150	$1.00	1,150	1,150	1,150	$1,150	0
14	Const. Fence	3,000	$1.15	3,000	3,000	3,000	$3,450	0
15	Obliterate	3,000	$1.00	3,000	3,000	3,000	$3,000	0
16	Storm Water	1	$650	1	1	1	$650	0
	Straw Bales	0	$9.00	0	0	0	0	0
	Silt Fence	0	$1.00	0	0	0	0	0
					TP-2/TP-4	TOTAL	$305,236	$900
	TP-3							
3	Clear & Grub	1	$9,379	1	1	1	$9.379	0
5	Temp	1	$117,135	1	1	1	$117,135	0
5	Diversion Pipe	1000	$3.75	0	(1,000)	(1,000)	($3,750)	($3,750)
6	Runon Control	800	$1.00	800	800	800	$800	0
7	Exc. Mine	21,000	$3.00	21,000	21,000	21,000	$63,000	0
8	Backfill	4,100	$5.85	4,100	4,100	4,100	$23,985	0
8	Filter Fabric	2,550	$1.80	2,550	2,550	2,550	$4.590	0
8	Type 1 Riprap	350	$36.50	350	350	350	$12,775	0
8	Type 2 Riprap	500	$36.50	500	500	500	$18,250	0
8	Plug	1	$1,680	1	1	1	$1,680	0
9	Mine Wst	21,000	$1.25	21,000	21,000	21,000	$26,250	0
10	Cover Soil	8,600	$3.73	8,600	8,600	8,600	$32,078	0
11	Fert. and	15.6	$450	7.4	15.6	15.6	$7,020	$3.690
12	Mulch	13.4	$450	7.4	13.4	13.4	$6,030	$2,700
13	Erosion Mat	580	$1.00	580	580	580	$580	0
14	Const. Fence	1,300	$1.15	0	1,300	1,300	$1,495	$1,495
14	Add. Fence	2,500	$1.60	0	2,500	2,500	$4,000	$4,000
15	Obliterate	6,500	$1.00	6,500	6,500	6,500	$6,500	0
					TP-3	TOTAL	$331,797	
	Materials on Site (Attach Schedule)	--	--	$	$	--	$	$
	TOTALS						$637,033	$9,035

APPENDIX F

PROJECT COMPLETION FORMS

AFFIDAVIT ON BEHALF OF CONTRACTOR

STATE OF MONTANA)
: ss
COUNTY OF LEWIS & CLARK)

DEQ-AMRB No.: 95-002

DATE: OCTOBER 29, 1996

I certify to the best of my knowledge and belief that all work has been performed and materials supplied in strict conformance with the terms and conditions of the corresponding contract documents between the **Montana Department of Environmental Quality, Abandoned Mine Reclamation Bureau**, the Owner, and **M.K. Weeden Construction, Inc.**, the Contractor, dated July 17, 1996 for the **Piegan-Gloster Millsite Reclamation Project**, DEQ-AMRB **95-002**, and further declare that all bills for materials, supplies, utilities, and for all other things furnished or caused to be furnished by the above-named Contractor and used in the execution of the above Contract have been fully paid, and there are no unpaid claims or demands of State Agencies, subcontractors, materialmen, mechanics, laborers or any others resulting from or arising out of work done or ordered to be done by said Contractor under the above-identified Contract.

In consideration of the prior and final payments made and all payments made for authorized changes, the Contractor releases and forever discharges the Owner from any and all obligations and liabilities arising by virtue of said Contract and authorized changes between the parties hereto, either verbal or in writing, and any and all claims and demands of every kind and character whatsoever against the Owner, arising out of or in any way relating to said Contract, and authorized changes.

This statement is made for the purpose of inducing the Owner to make Final Payment under the terms of the Contract, relying on the truth and statements contained therein.

Dated this 18TH day of NOVEMBER, 1996, at LEWISTOWN, Montana.

CONTRACTOR: M.K. Weeden Construction, Inc.

By: Marto Weeden
Title: PRESIDENT

Subscribed and sworn to before me this 8th day of November, 1996.

Laurie L. Sweeney
Notary Public for the State of Montana
Residing at Lewistown
My commission expires 6-20-00

(SEAL)

CONTRACTOR'S CERTIFICATE OF COMPLETION

TO (Owner): Montana Department of
Environmental Quality/AMRB
1520 E. Sixth Avenue
Helena, Montana 59620
ATTN: Joel Chavez

DATE: October 26, 1996
PROJECT TITLE: Piegan-Gloster Millsite Reclamatiom Project
Lewis & Clark County, Montana
DEQ-AMRB: 95-002
CONTRACT DATE: July 17, 1996

FROM: M.K. Weeden Construction, Inc.
(Firm or Corporation)

This is to certify that I, Monte Weeden, am an authorized official of M.K. Weeden Construction, Inc., working in the capacity of President and have been properly authorized by said firm or corporation to sign the following statements pertaining to the subject contract:

> I know of my own personal knowledge, and do hereby certify, that the work of the contract described above has been performed, and materials used and installed in every particular, in accordance with, and in conformity to, the Contract Plans and Specifications.
>
> The contract work is now complete in all parts and requirements and ready for your substantial completion inspection.
>
> I understand that neither the determination of the Engineer that the work is complete nor the acceptance thereof by the Owner shall operate as a bar to claim against the Contractor under the terms of the guarantee provisions of the Contract Documents.

CONTRACTOR: M.K. Weeden Construction, Inc.

By: Monte Weeden PRESIDENT
Title

Distribution:
1. Project Manager
2. Field Office
3. File

CONSENT OF SURETY COMPANY TO FINAL PAYMENT

(From AIA Document G707)

OWNER ☐
ENGINEER ☐
CONTRACTOR ☐
SURETY ☐
OTHER

PROJECT: Piegan-Gloster Millsite Reclamation Project
(name, address)

TO (Owner)
Montana Department of Environmental Quality
Abandoned Mine Reclamation Bureau
P.O. Box 200901
Helena, Montana 59620

DEQ-AMRB NO.: 95-002

CONTRACT FOR: Piegan-Gloster Millsite Reclamation Project
CONTRACT DATE: July 17, 1996

CONTRACTOR: M.K. Weeden Construction, Inc.

In accordance with the provisions of the contract between the Owner and the Contractors indicated above, the FIRST NATIONAL INSURANCE COMPANY OF AMERICA SAFECO PLAZA, SEATTLE, WA 98185, SURETY COMPANY, cn bond
(here insert name and address of Surety Company)
of M.K. Weeden Construction, Inc, CONTRACTOR, hereby approves of the final
(here insert name and address of Contractor)
payment to the Contractor, and agrees that final payment to the Contractor shall not relieve the Surety Company of any of its obligations to Montana Dept. of Environmental Quality/AMRB, OWNER, as set
(here insert name and address of Owner)
forth in the said Surety Company's bond.

IN WITNESS WHEREOF, the Surety Company has hereunto set its hand this 20TH day of NOVEMBER, 19 96.

FIRST NATIONAL INSURANCE COMPANY OF AMERICA
Surety Company

John D. Leaf
Signature of Authorized Representative JOHN D. LEAF

ATTORNEY-IN-FACT
Title

Beth Keller
Attest: BETH KELLER
(Seal)

NOTE. This form is to be used as a companion document to the Affidavit on Behalf of Contractor (current edition).

FIRST NATIONAL SURETY
FIRST NATIONAL INSURANCE CO. OF AMERICA
4333 Brooklyn Avenue N.E.
Seattle, WA 98105

POWER OF ATTORNEY

FIRST NATIONAL INSURANCE COMPANY OF AMERICA
4333 BROOKLYN AVE NE
SEATTLE, WASHINGTON 98105

No. 282

KNOW ALL BY THESE PRESENTS:

That **FIRST NATIONAL INSURANCE COMPANY OF AMERICA**, a Washington corporation, does hereby appoint
GORDON D. McMANUS; JOHN D. LEAF; CINDY S. REIQUAM; LORI L. WALKER; MARK S. NICHOLLS; Great Falls, Idaho

its true and lawful attorney(s)-in-fact, with full authority to execute on behalf of the company fidelity and surety bonds or undertakings and other documents of a similar character issued by the company in the course of its business, and to bind **FIRST NATIONAL INSURANCE COMPANY OF AMERICA** thereby as fully as if such instruments had been duly executed by its regularly elected officers at its home office.

IN WITNESS WHEREOF, FIRST NATIONAL INSURANCE COMPANY OF AMERICA has executed and attested these presents

this 12th day of October, 19 94.

CERTIFICATE

Extract from the By-Laws of **FIRST NATIONAL INSURANCE COMPANY OF AMERICA:**

"Article V, Section 13. - FIDELITY AND SURETY BONDS . . . the President, any Vice President, the Secretary, and any Assistant Vice President appointed for that purpose by the officer in charge of surety operations, shall each have authority to appoint individuals as attorneys-in-fact or under other appropriate titles with authority to execute on behalf of the company fidelity and surety bonds and other documents of similar character issued by the company in the course of its business . . . On any instrument making or evidencing such appointment, the signatures may be affixed by facsimile. On any instrument conferring such authority or on any bond or undertaking of the company, the seal, or a facsimile thereof, may be impressed or affixed or in any other manner reproduced; provided, however, that the seal shall not be necessary to the validity of any such instrument or undertaking."

Extract from a Resolution of the Board of Directors of
FIRST NATIONAL INSURANCE COMPANY OF AMERICA adopted July 28, 1970.

"On any certificate executed by the Secretary or an assistant secretary of the Company setting out,
(i) The provisions of Article V, Section 13 of the By-Laws, and
(ii) A copy of the power-of-attorney appointment, executed pursuant thereto, and
(iii) Certifying that said power-of-attorney appointment is in full force and effect,
the signature of the certifying officer may be by facsimile, and the seal of the Company may be a facsimile thereof."

I, R. A. Pierson, Secretary of **FIRST NATIONAL INSURANCE COMPANY OF AMERICA**, do hereby certify that the foregoing extracts of the By-Laws and of a Resolution of the Board of Directors of this corporation, and of a Power of Attorney issued pursuant thereto, are true and correct, and that both the By-Laws, the Resolution and the Power of Attorney are still in full force and effect.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the facsimile seal of said corporation

this 20TH day of NOVEMBER, 19 96.

CERTIFICATE OF SUBSTANTIAL COMPLETION

TO: Montana Department of Environmental Quality, Abandoned Mine Reclamation Bureau OWNER

PROJECT TITLE: Piegan-Gloster Millsite Reclamation Project

DEQ-AMRB: 95-002

CONTRACT DATE: July 17, 1996

LOCATION: Piegan-Gloster Millsite, Lewis & Clark County, Montana

PROJECT OR PART SHALL INCLUDE: All work items for the project as specified in the contract

CONTRACTOR: M.K. Weeden Construction, Inc.

ADDRESS: P.O. Box 1164
Lewistown, Montana 59457

TELEPHONE NO: 406-538-3726

SUBSTANTIAL COMPLETION DATE: October 29,1996

DEQ INSPECTION DATE: October 29, 1996

ENGINEER: Kevin S. Rauch, P.E., Olympus Environmental Science & Engineering, Inc., 765 Colleen, Helena, MT 59601

PERFORMANCE BOND NO: 5847461

DATE OF BOND: July 17, 1996

SURETY: First National Insurance Company of America

MONTANA AGENT: Flynn Insurance Agency

ADDRESS: P.O. Box 711
Great Falls, Montana 59403

The Work performed under this Contract has been inspected by authorized representatives of the Owner, Contractor, and Engineer, and the Project (or specified part of the Project, as indicated above) is hereby declared to be substantially completed on the above date.

DEFINITION OF SUBSTANTIAL COMPLETION

The date of substantial completion of a project or specified area of a project is the data when the construction is sufficiently completed, in accordance with the contract documents, as modified by any change order agreed to by the parties, so the Owner can occupy or utilize the project or specifies area of the project for the use for which it was intended.

A tentative list of items to be completed is appended hereto. This list may not be exhaustive, and the failure to include an item on it does not alter the responsibility of the Contractor to complete all the Work in accordance with the Contract Documents.

ENGINEER: Olympus Environmental Science and Engineering, Inc.

By Kevin S. Rauch 11-13-96
Authorized Representative Date

The Contractor accepts the above Certificate of Substantial Completion and agrees to complete and correct the items on the tentative list within the time indicated.

CONTRACTOR: M.K. Weeden Construction, Inc.

By 11/18/96
Authorized Representative Date

The Owner accepts the Project or specified area of the Project as substantially complete and will assume full possession of the project or specified area at ______ (time), on 11/20/96 (date). The responsibility for heat, utilities, security, and insurance under the Contract Documents shall be as set forth under "Remarks" below.

OWNER: MDEQ/Abandoned Mine Reclamation Bureau

By 11/20/96
Authorized Representative Date

Remarks: (Attach additional sheet, if necessary)

CERTIFICATE OF ACCEPTANCE

TO: Montana Department of Environmental Quality, Abandoned Mine Reclamation Bureau OWNER

PROJECT TITLE: Piegan-Gloster Millsite Reclamation Project

DEQ-AMRB: 95-002
CONTRACT DATE: July 17, 1996
LOCATION: Piegan-Gloster Millsite, Lewis & Clark County, Montana
PROJECT OR PART SHALL INCLUDE: All work items for the project as specified in the contract
CONTRACTOR: M.K. Weeden Construction, Inc.
ADDRESS: P.O. Box 1164
Lewistown, Montana 59457
TELEPHONE NO: 406-538-3726

FINAL ACCEPTANCE DATE: October 29, 1996
DEQ INSPECTION DATE: October 29, 1996
ENGINEER: Kevin S. Rauch, P.E. Olympus Environmental Science & Engineering, Inc., 765 Colleen, Helena, MT 59601
PERFORMANCE BOND NO: 5847461
DATE OF BOND: July 17, 1996
SURETY: First National Insurance Company of America
MONTANA AGENT: Flynn Insurance Agency
ADDRESS: P.O. Box 711
Great Falls, Montana 59403

The Work performed under this Contract has been inspected by authorized representatives of the Owner, Contractor, and Engineer, and the Project (or specified part of the Project, as indicated above) is hereby declared to be totally completed and accepted on the above date.

ENGINEER: Olympus Environmental Science and Engineering, Inc.

By Kevin S. Rauch 11-13-96
Authorized Representative Date

The Contractor accepts the above Certificate of Acceptance and agrees to abide by the conditions of the one-year warranty period which began on the substantial completion date.

CONTRACTOR: M.K. Weeden Construction, Inc.

By Mark Weeden 11/12/96
Authorized Representative Date

The Owner accepts the Project as totally complete, and final payment is due to the Contractor as provided in the contract documents.

OWNER: MDEQ/Abandoned Mine Reclamation Bureau

By 11/20/96
Authorized Representative Date

APPENDIX G

ENGINEERING COST ANALYSIS

ANALYSIS OF ENGINEERING COSTS INCURRED
FOR THE MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY
MINE WASTE CLEANUP BUREAU
MDEQ/MWCB PROJECT NUMBER: DEQ/MWCB 95-002
PIEGAN-GLOSTER MILLSITE RECLAMATION PROJECT

ENGINEERING SERVICES	AMOUNT
Reclamation Work Plan and Supporting Documents	$25,432.37
Site Characterization	$81,963.41
Engineering Evaluation/Cost Analysis	$21,390.50
Design Engineering and Bid Specification Preparation	$26,630.14
Construction Engineering	$46,540.08
Total Engineering Costs	**$201,956.50**

CONSTRUCTION SERVICES	AMOUNT
M.K. Weeden Construction, Inc. Contract	$637,033.00

PERCENTAGE ENGINEERING FEES TO CONSTRUCTION COST	
Planning-Characterization/Construction Cost	20.2%
Design Engineering/Construction Cost	4.2%
Construction Engineering/Construction Cost	7.3%
Total Engineering/Construction Cost	31.7%

APPENDIX H

CONSTRUCTION BID PACKAGE DRAWINGS

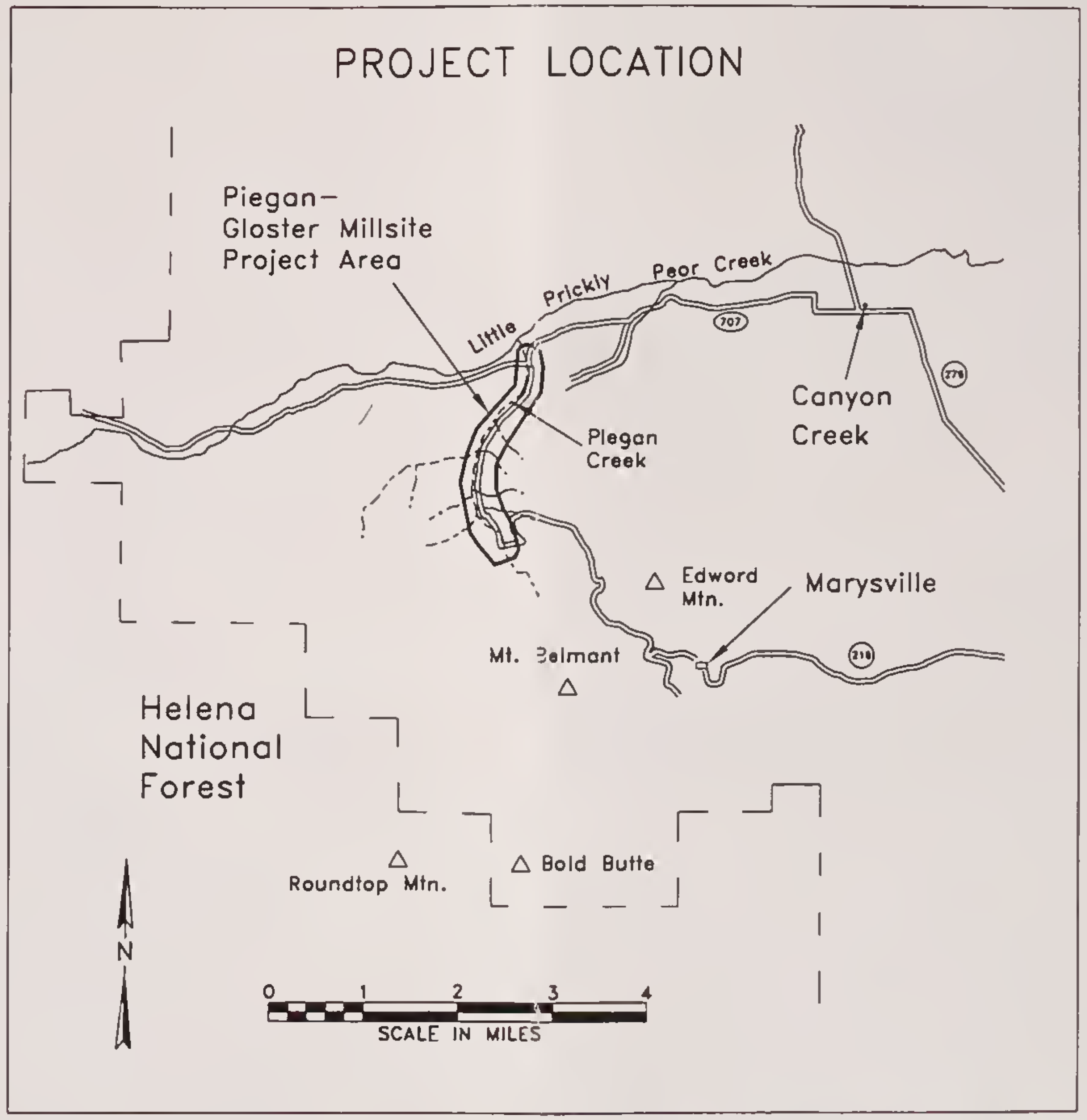
SHEET NO.	DESCRIPTION
1	COVER
2	LEGEND
3	GENERAL SITE MAP
4	ROAD IMPROVEMENT PLAN
5	TYPICAL ROAD IMPROVEMENT SECTIONS
6	RUNON DITCH AND STREAM DIVERSION LOCATIONS
7	TEMPORARY STREAM DIVERSION DETAILS
8	RUNON DIVERSION DITCH DETAILS
9	TAILINGS EXCAVATION PLAN VIEW (TP-2 & TP-4)
10	TAILINGS REMOVAL SECTIONS (TP-2)
11	TAILINGS REMOVAL SECTIONS (TP-4)
12	FINAL GRADE (TP-2 & TP-4)
13	BACKFILL & FINAL GRADE SECTIONS (TP-2)
14	BACKFILL & FINAL GRADE SECTIONS (TP-4)
15	FINAL GRADE LONGITUDINAL SECTIONS
16	STREAM CHANNEL DETAILS (TP-2)
17	STREAM CHANNEL DETAILS (TP-4)
18	ROAD OBLITERATION PLAN

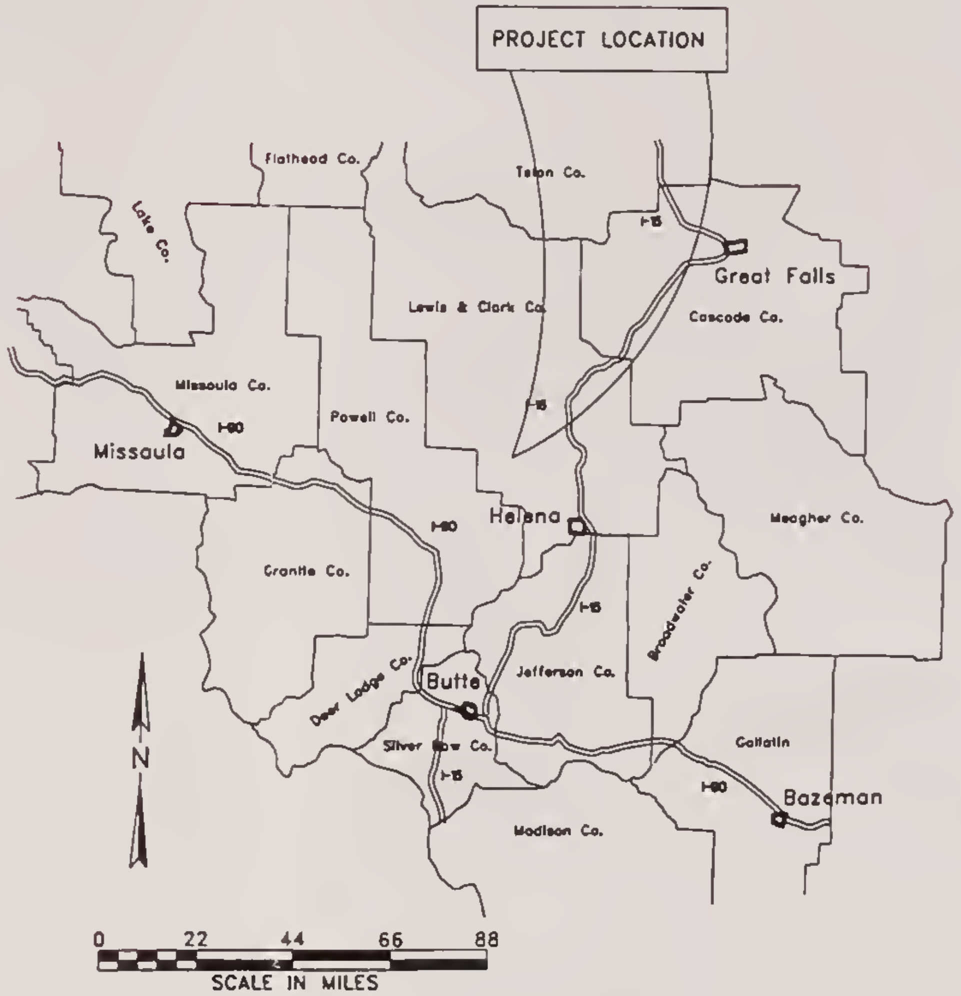
MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY
ABANDONED MINE RECLAMATION BUREAU

PLANS FOR PROPOSED PIEGAN-GLOSTER MILLSITE RECLAMATION PROJECT

LEWIS AND CLARK COUNTY, MONTANA

MONTANA
AMRB





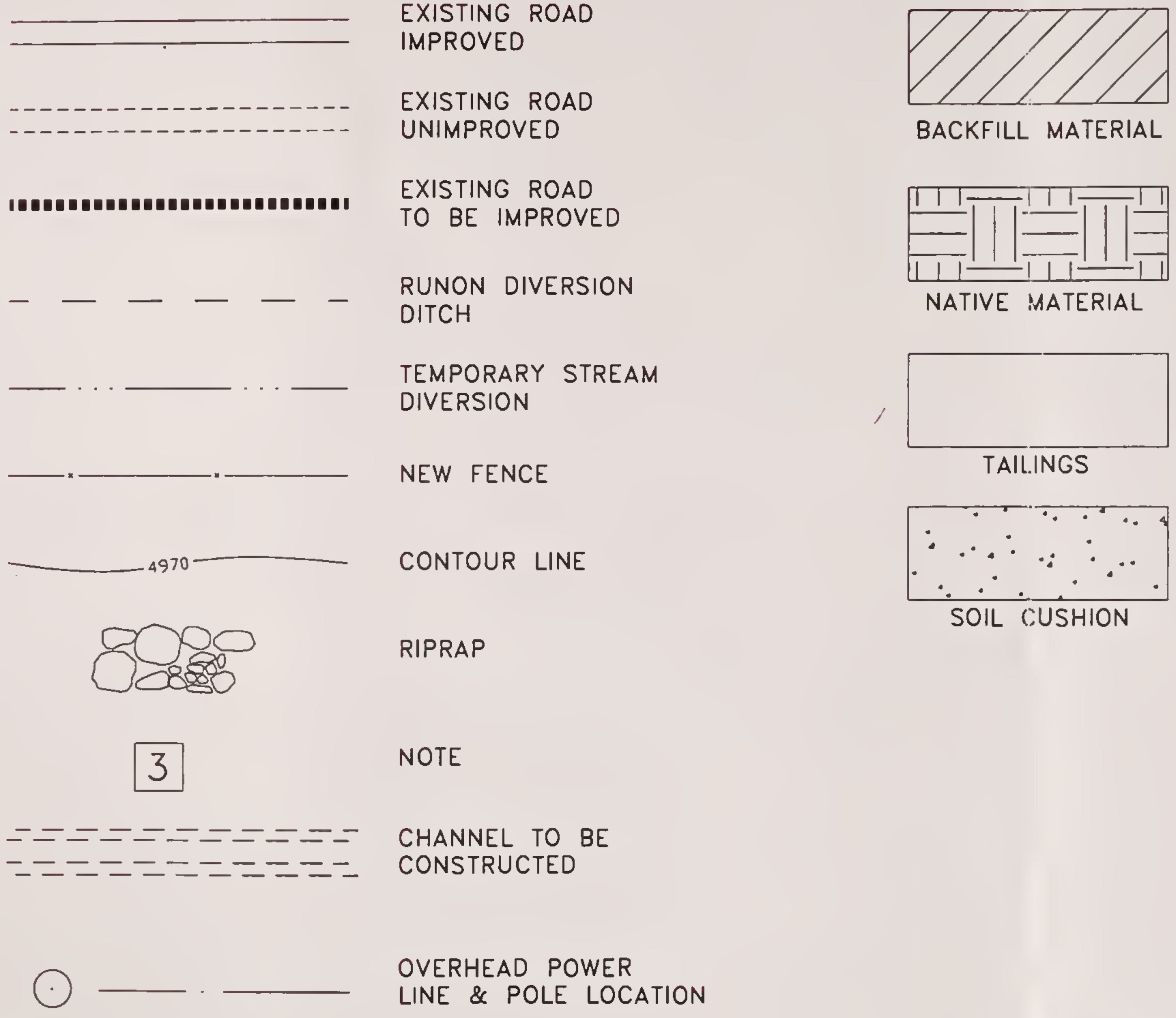
MONTANA
KEVIN S. RAUCH
12006PE
6-24-96
REGISTERED
PROFESSIONAL ENGINEER

OLYMPUS
ENVIRONMENTAL, INC.

COVER

PIEGAN-GLOSTER MILLSITE
Lewis and Clark County
Montana

Design: DGW	Drawn: DGW				SHEET
Checked: KSR	Date: 5/23/96				
Approved: KSR	Revision	By	Date		1 OF 18
Job No: 95-5760					
CAD File: Index					
Scale: AS SHOWN					

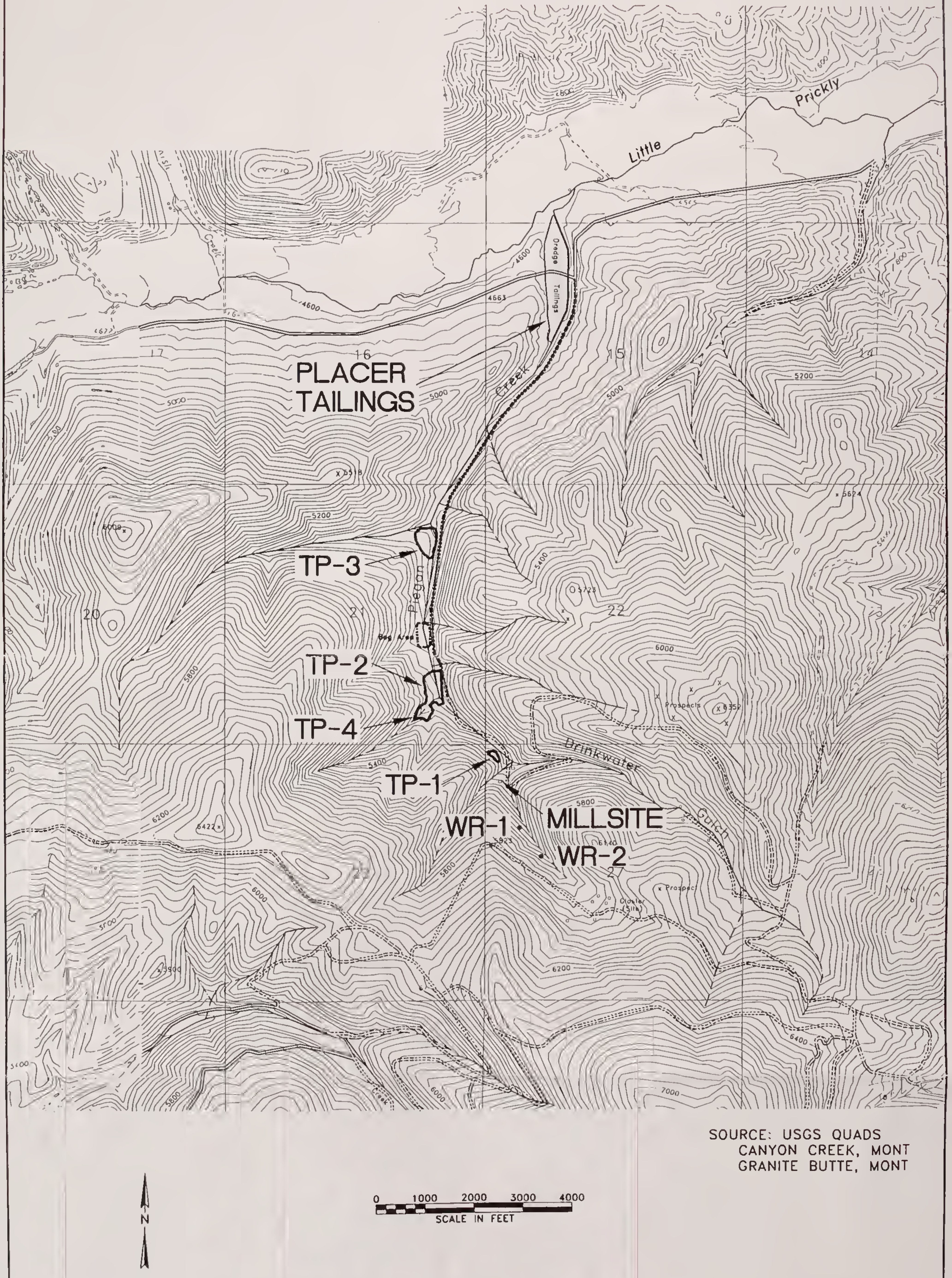


℄ = CENTER LINE
fmsl = FEET MEAN SEA LEVEL
REF = REFERENCE
SHT = SHEET
TP = TAILINGS PILE
WR = WASTE ROCK
⊕ DH2 = DRILL HOLE LOCATION
▭ P4 = TEST PIT LOCATION

OLYMPUS
ENVIRONMENTAL, INC.

LEGEND
PIEGAN–GLOSTER MILLSITE
LEWIS AND CLARK COUNTY
MONTANA

Design: DGW	Drawn: DGW				SHEET
Checked: KSR	Date: 6/15/96				
Approved: KSR	Revision	By	Date		2 OF 18
Job No: 95-5760					
CAD File: legend					
Scale:					



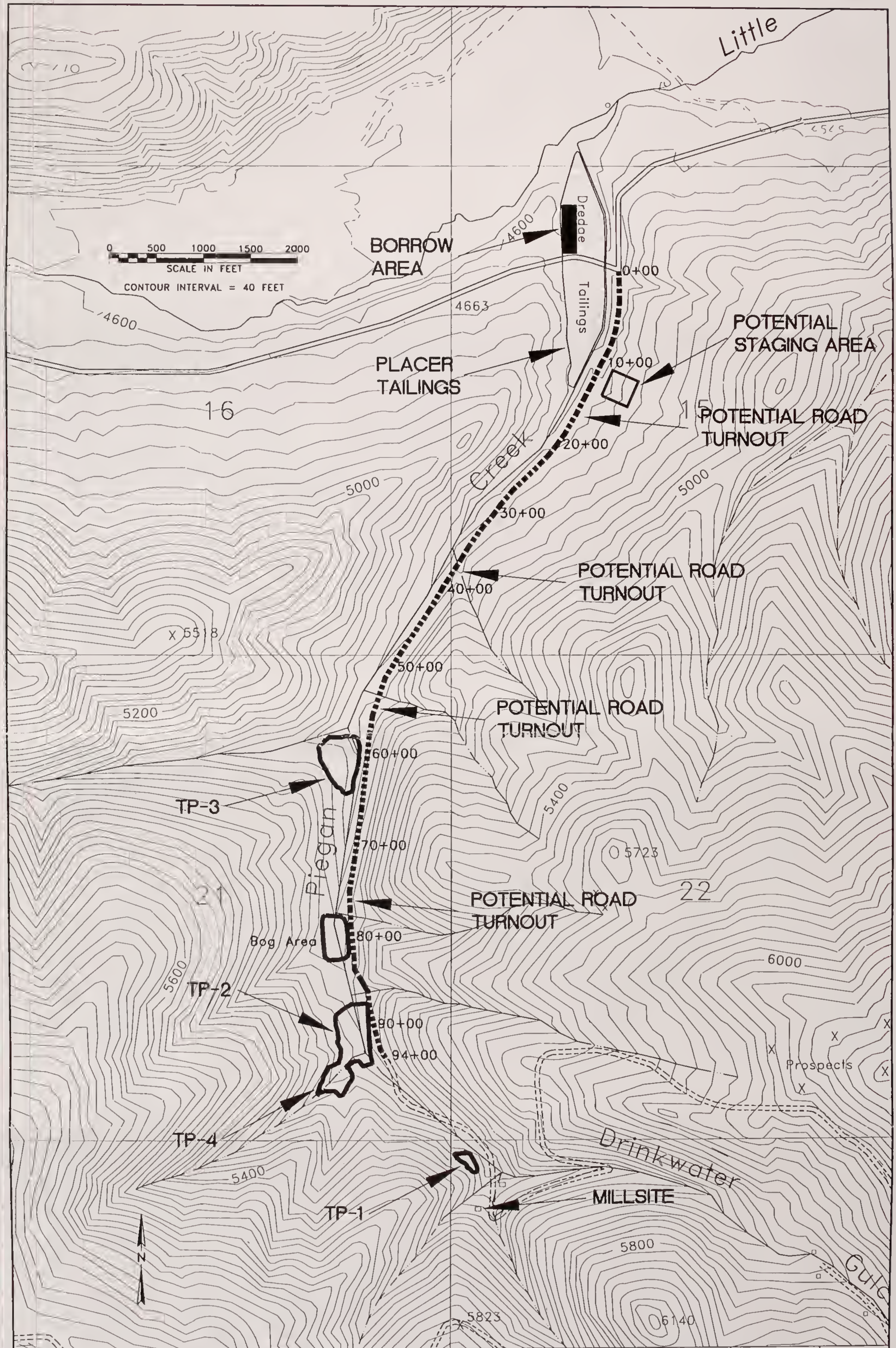
SOURCE: USGS QUADS
CANYON CREEK, MONT
GRANITE BUTTE, MONT

OLYMPUS
ENVIRONMENTAL, INC.

GENERAL SITE MAP

PIEGAN-GLOSTER MILLSITE
Lewis and Clark County
Montana

Design: DGW	Drawn: DGW			SHEET
Checked: KSR	Date: 5/28/96			
Approved: KSR	Revision	By	Date	3 OF 18
Job No: 95-5760				
CAD File: site_map				
Scale: AS SHOWN				



SOURCE: USGS QUADS
CANYON CREEK, MONT
GRANITE BUTTE, MONT

OLYMPUS
ENVIRONMENTAL, INC.

ROAD IMPROVEMENT PLAN

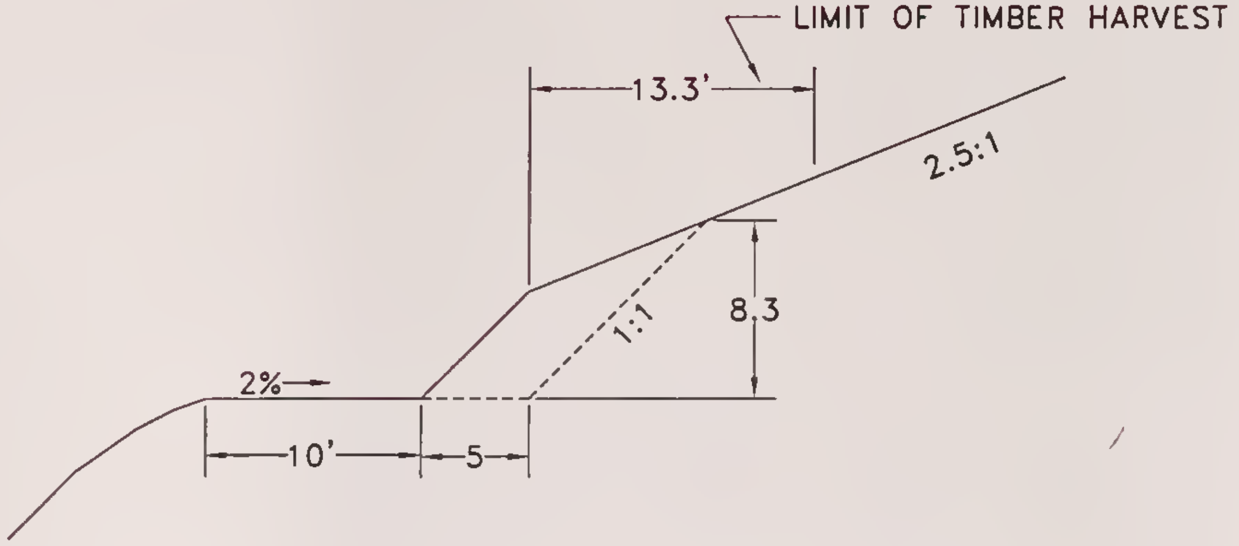
PIEGAN–GLOSTER MILLSITE
Lewis and Clark County
Montana

Design: KSR
Checked: OGW
Approved: KSR
Job No: 95-5760
CAD File: 5760ROA0
Scale: AS SHOWN

Drawn: KSR
Date: 6/14/96

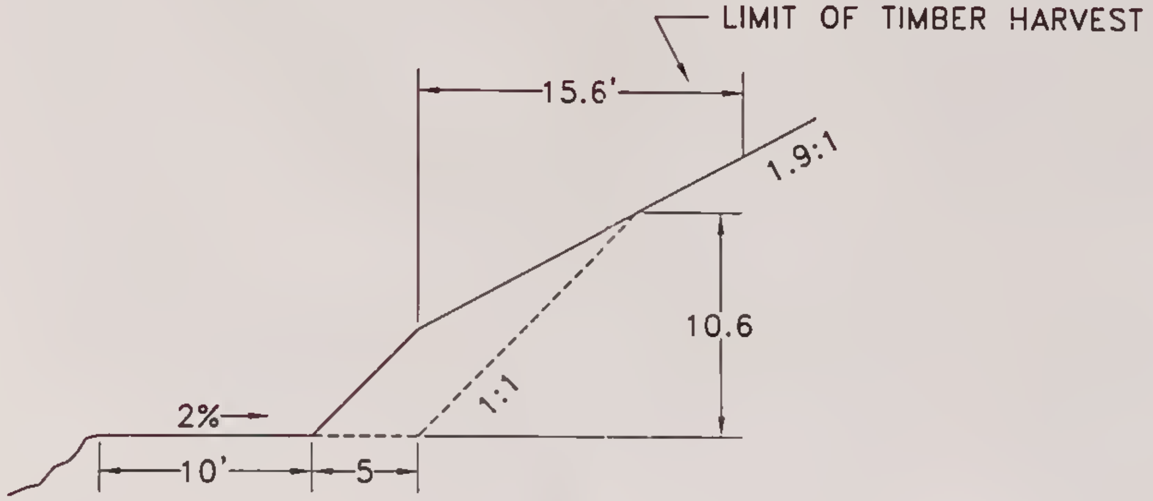
Revision	By	Date

SHEET
4 OF 18



STATION 88+00 - 92+00

REF. SHT. 4



STATION 58+00 - 64+00

REF. SHT. 4

- - - - - - NEW SURFACE
——— EXISTING SURFACE

OLYMPUS ENVIRONMENTAL, INC.

TYPICAL ROAD IMPROVEMENT SECTIONS

PIEGAN-GLOSTER MILLSITE

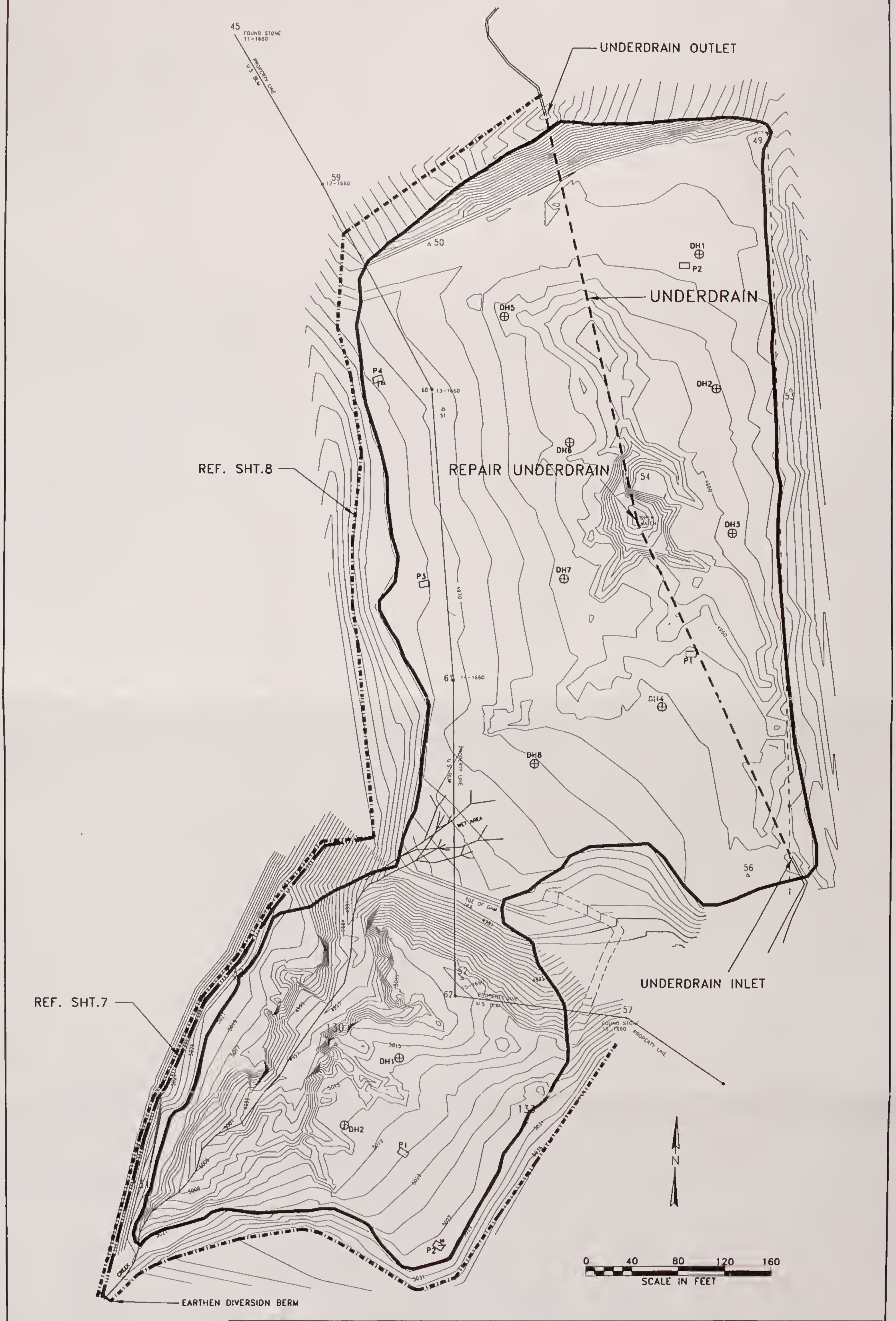
Lewis and Clark County
Montana

Design: KSR
Checked: DGW
Approved: KSR
Job No: 95-576D
CAD File: 5760RSEC
Scale: AS SHOWN

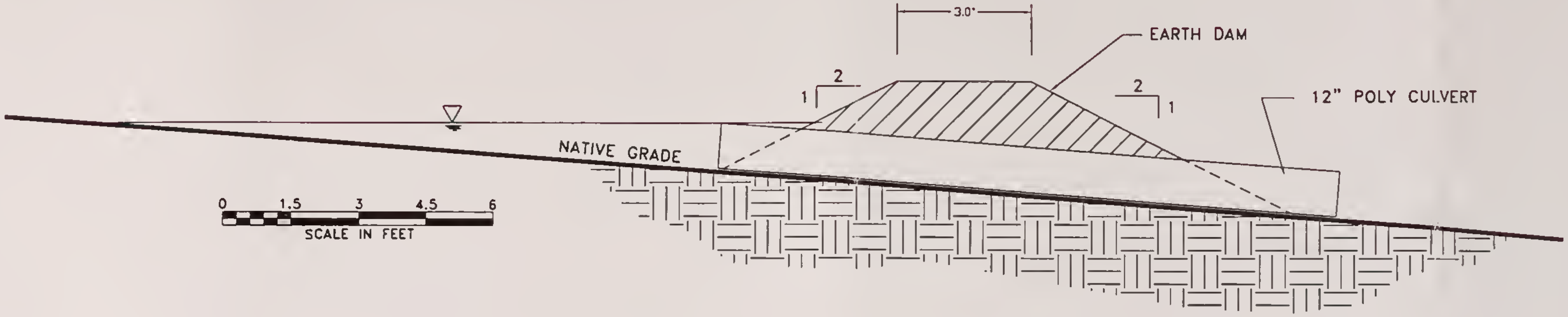
Drawn: KSR
Date: 6/14/96

Revision	By	Date

SHEET
5 OF 18

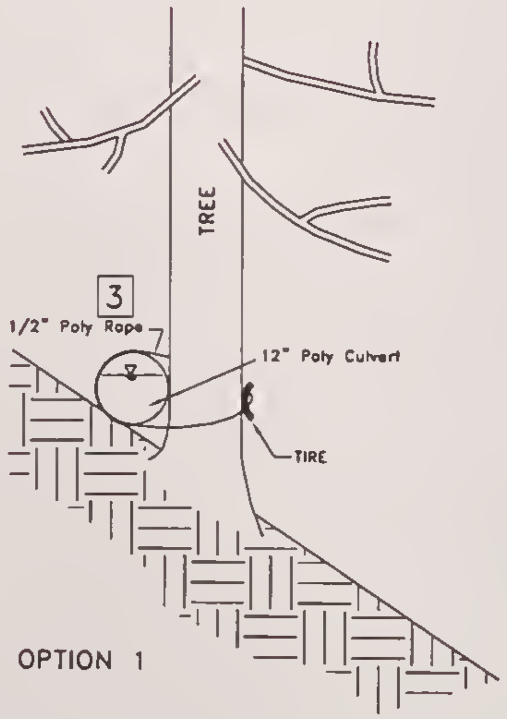


OLYMPUS ENVIRONMENTAL, INC.	RUNON DITCHES AND STREAM DIVERSION LOCATIONS	Design: OGW	Drawn: OGW			SHEET
		Checked: KSR	Date: 6/13/96			
	PIEGAN–GLOSTER MILLSITE Lewis and Clark County Montana	Approved: KSR	Revision	By	Date	6 OF 18
		Job No: 95-5760				
		CAD File: dlv_dltch				
		Scale: AS SHOWN				

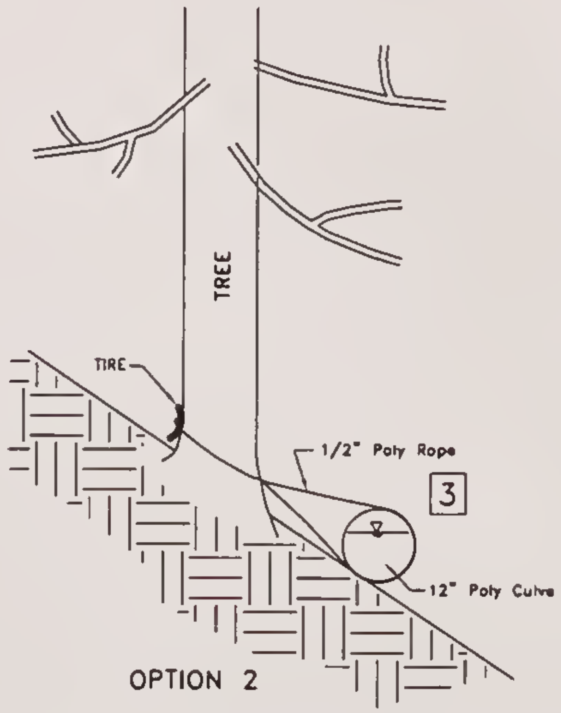


NOTES:

1. Designed for the 2-yr, 24-hr storm (<1 cfs)
2. The height of the earth dam was calculated to be 2 feet (1 foot freeboard).
3. The culvert will be anchored via option 1 or option 2, using 1/2 inch. polyethylene rope.
4. Refer to Sheet 6 for plan map of stream diversion locations



OPTION 1

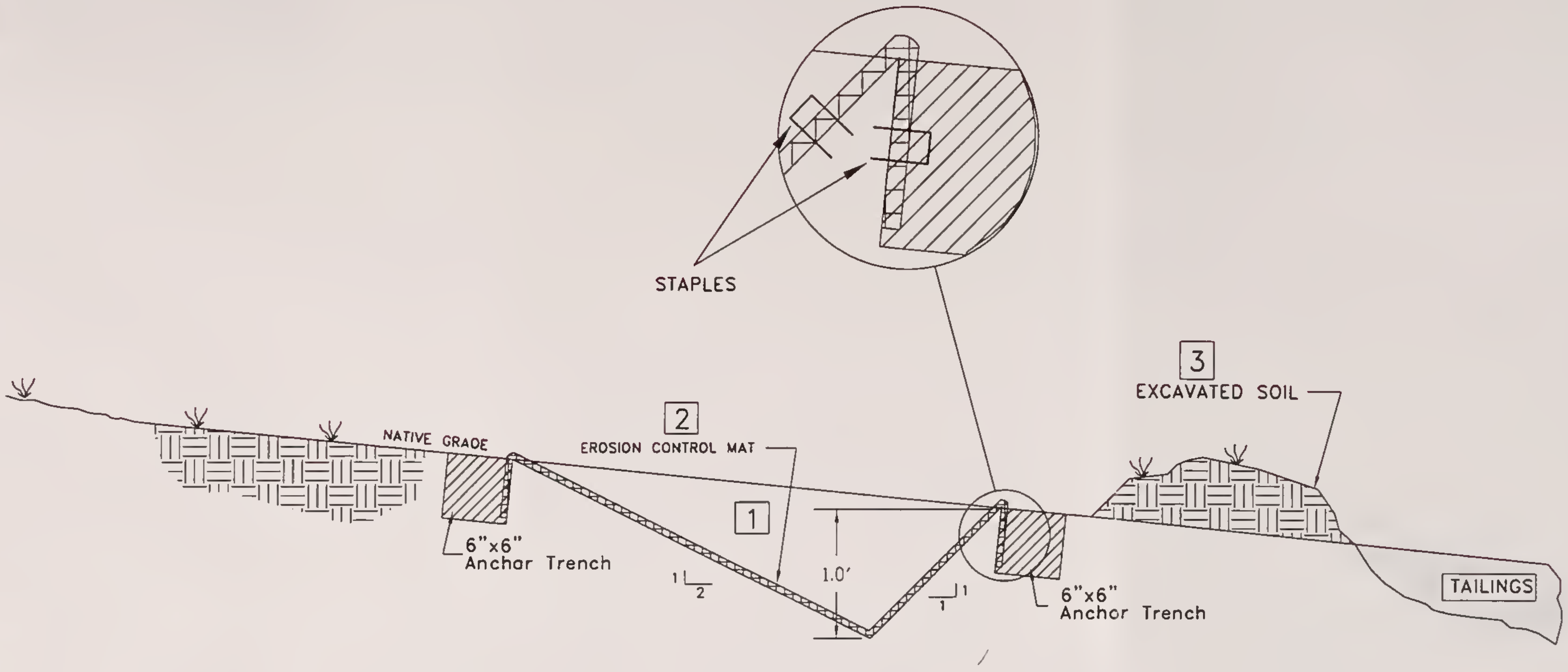


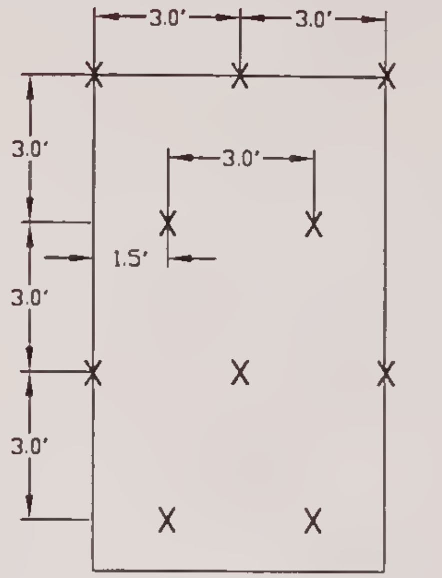
OPTION 2

NOT TO SCALE

OLYMPUS
ENVIRONMENTAL, INC.

TEMPORARY STREAM DIVERSION DETAILS	Design: DGW	Drawn: DGW			SHEET
	Checked: KSR	Date: 6/14/96			
PIEGAN-GLOSTER MILLSITE	Approved: KSR	Revision	By	Date	
	Job No: 95-5760				7 OF 18
LEWIS AND CLARK COUNTY MONTANA	CAD File: temp				
	Scale: AS SHOWN				





STAPLE PATTERN DETAIL
1.2 STAPLES PER SQUARE YARD

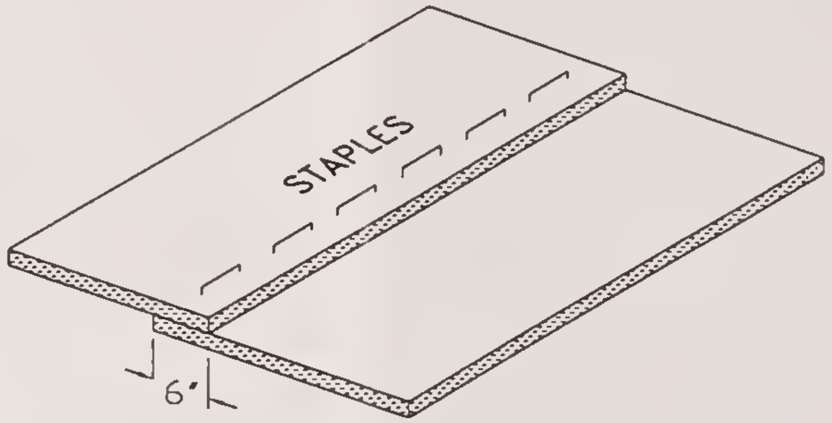
NOTES

1. FERTILIZE, SEED, AND MULCH IN ACCORDANCE WITH THE SPECIAL PROVISIONS, ALL AREAS DISTURBED BY DIVERSION CONSTRUCTION.

2. INSTALL EROSION CONTROL MAT ALONG BOTTOM OF DIVERSION IN ACCORDANCE WITH SPECIAL PROVISIONS AND DETAILS ON THIS SHEET. ANCHOR MAT ON ALL SIDES IN ACCORDANCE WITH DETAILS ON THIS SHEET. ROLL MAT PARALLEL TO WATER FLOW DIRECTION.

3. USE SOIL EXCAVATED TO FORM DIVERSIONS FOR COVER SOIL IN ACCORDANCE WITH THE SPECIAL PROVISIONS.

4. REFER TO SHEET 6 FOR PLAN MAP OF RUNON DIVERSION DITCH LOCATIONS.



SINGLE STYLE
OVERLAP DETAIL

DRAWING NOT TO SCALE

OLYMPUS
ENVIRONMENTAL, INC.

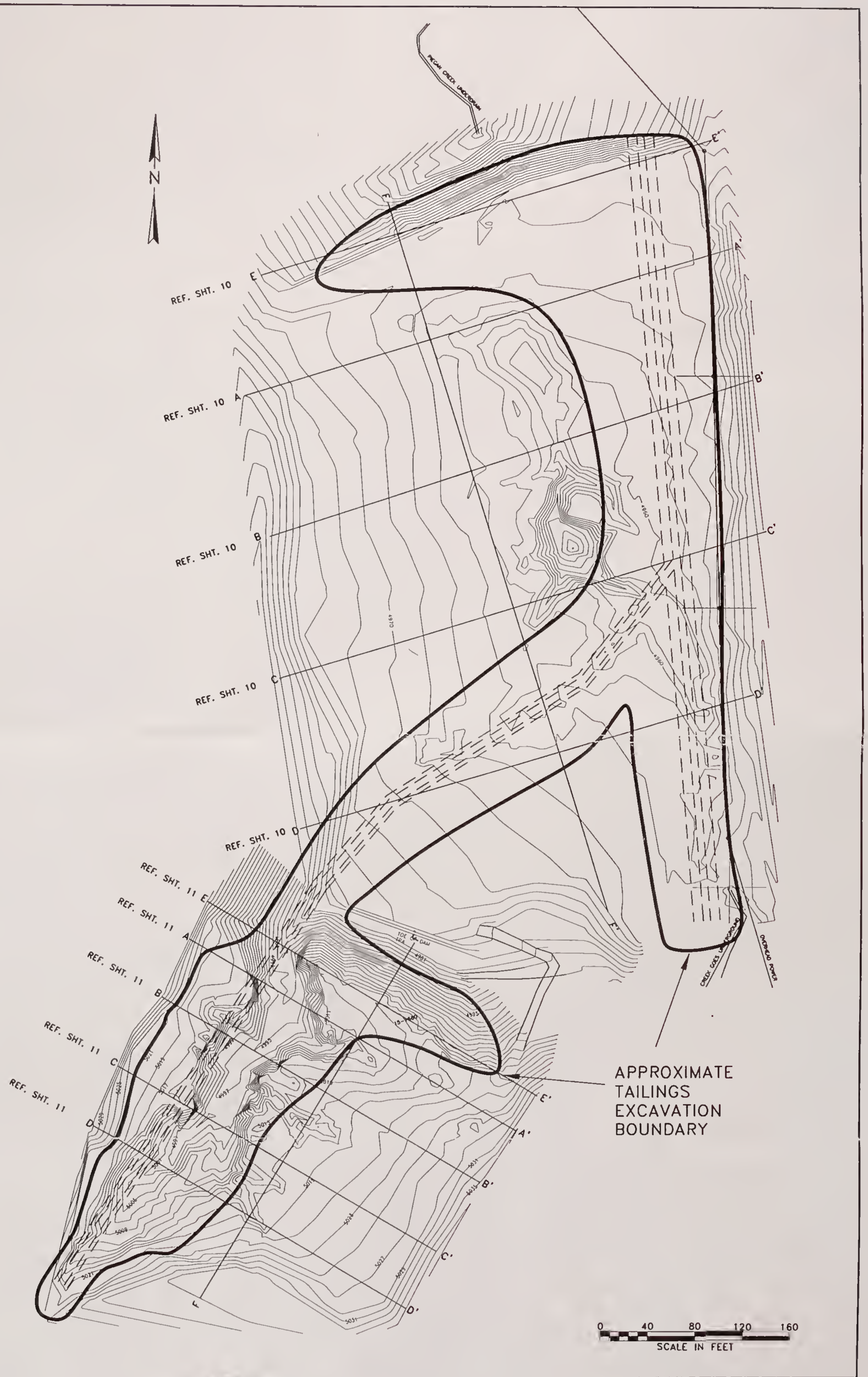
RUNON DIVERSION
DITCH DETAILS
PIEGAN-GLOSTER MILLSITE
Lewis and Clark County
Montana

Design: DGW
Checked: KSR
Approved: KSR
Job No: 95-5760
CAD File: diversion
Scale: AS SHOWN

Drawn: DGW
Date: 6/8/96

Revision	By	Date

SHEET
8 OF 18



OLYMPUS
ENVIRONMENTAL, INC.

TAILINGS EXCAVATION
PLAN VIEW (TP-2 & TP-4)
PIEGAN-GLOSTER MILLSITE
LEWIS AND CLARK COUNTY
MONTANA

Design: OGW	Drawn: OGW			SHEET
Checked: KSR	Date: 6/14/96			
Approved: KSR	Revision	By	Date	9 OF 18
Job No: 95-5760				
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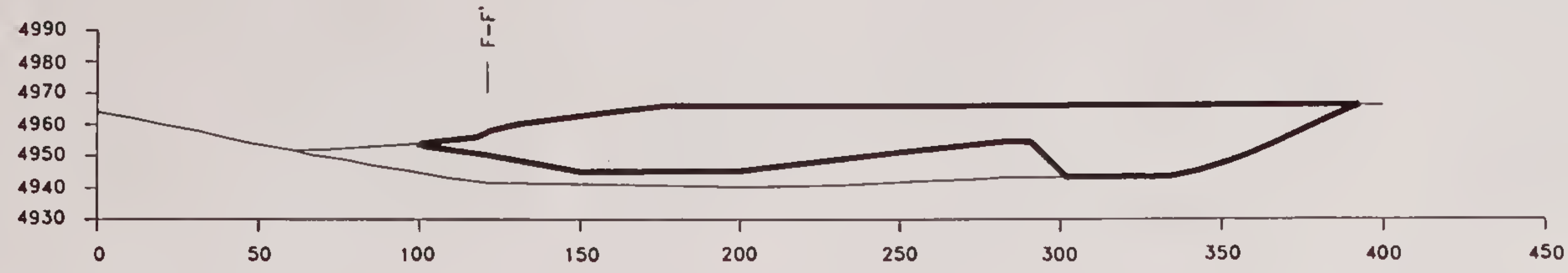
Scale: AS SHOWN				



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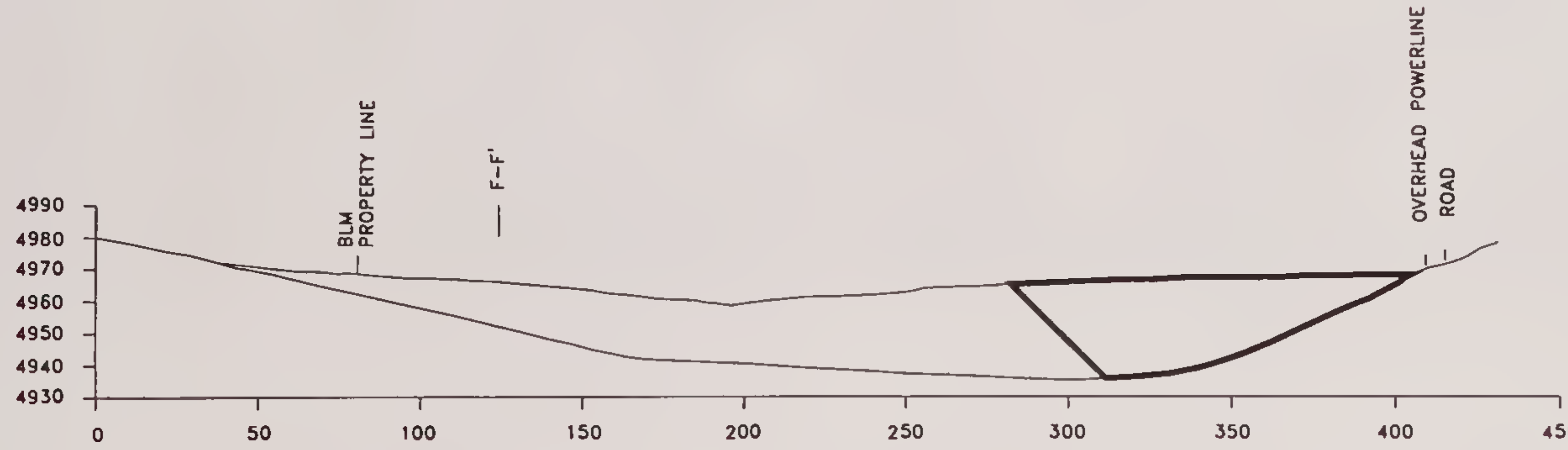

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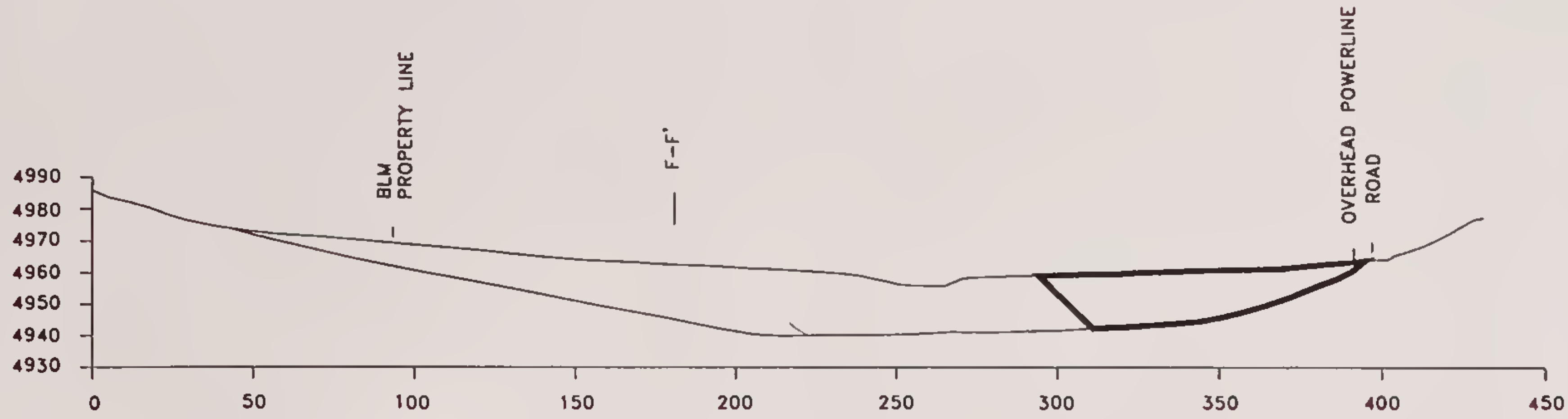

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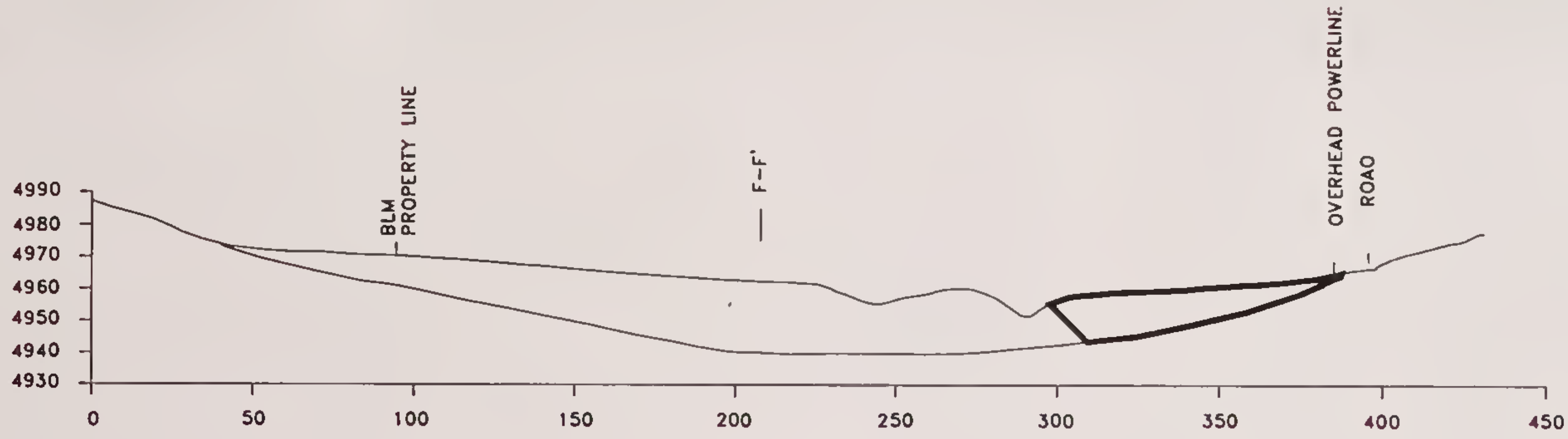

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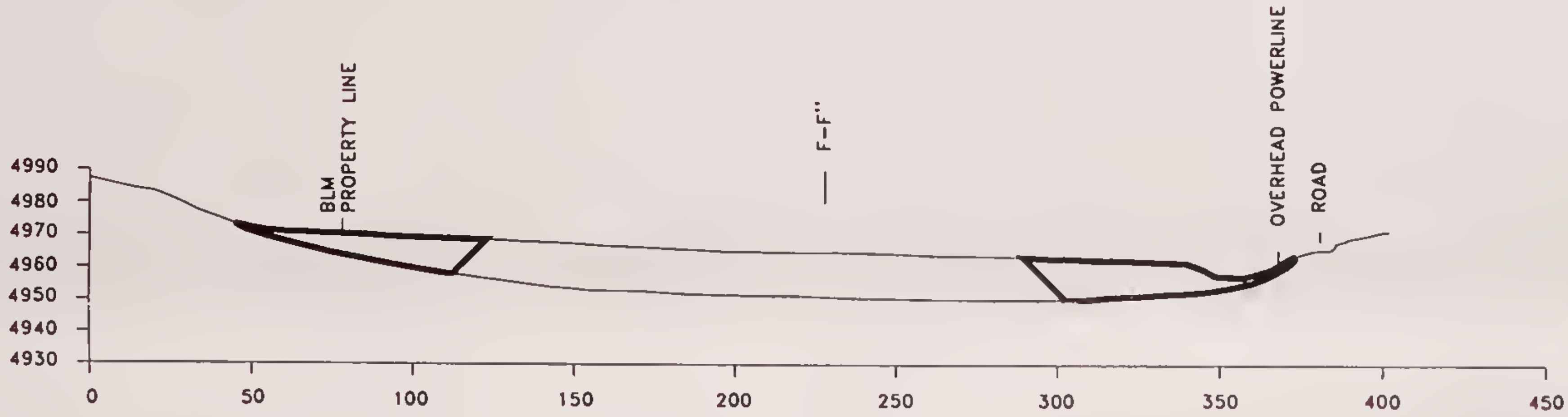

CROSS SECTION D-D'

REFER TO SHEET 9 FOR
SECTION LOCATIONS

LEGEND

TAILINGS
REMOVAL

OLYMPUS
ENVIRONMENTAL, INC.

TAILINGS REMOVAL
SECTIONS (TP-2)
PIEGAN-GLOSTER MILLSITE
LEWIS AND CLARK COUNTY
MONTANA

Design: KSR	Drawn: DGW			SHEET
Checked: DGW	Date: 6/11/96			
Approved: KSR	Revision	By	Date	10 OF 18
Job No: 95-5760				
CAD File:tp2_remov				
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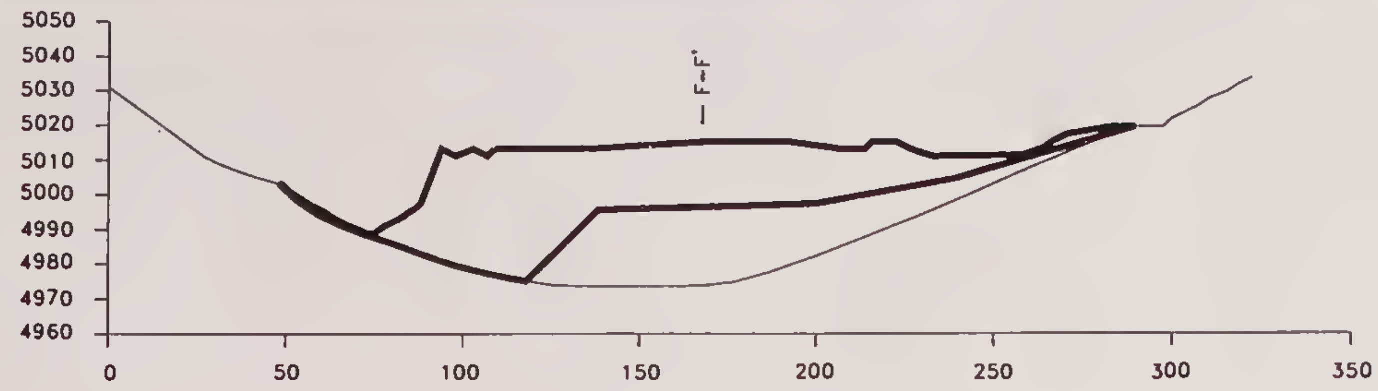

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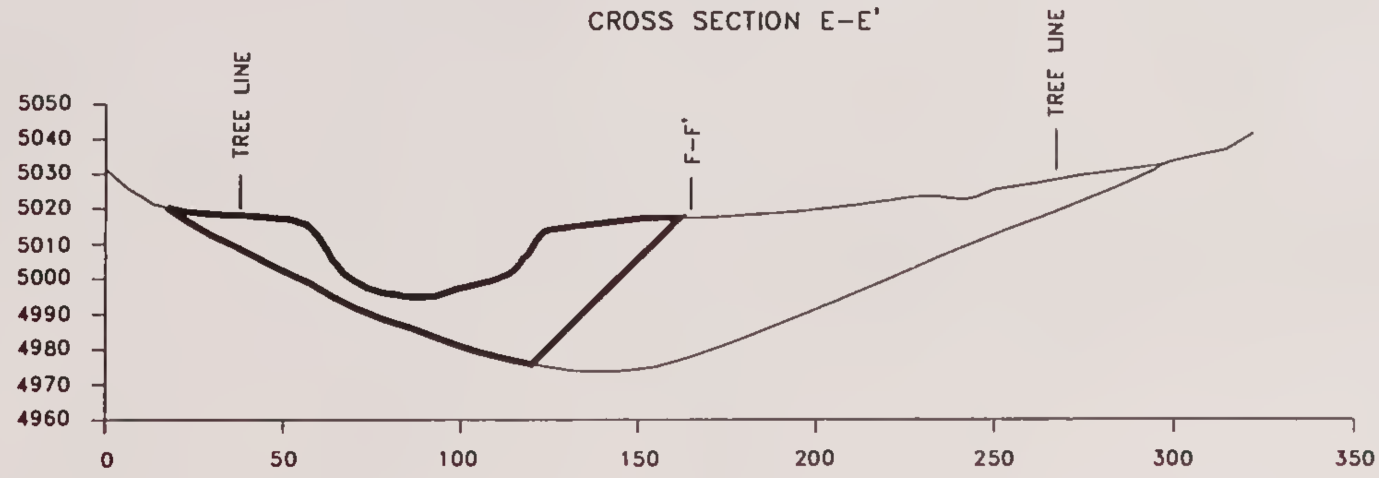

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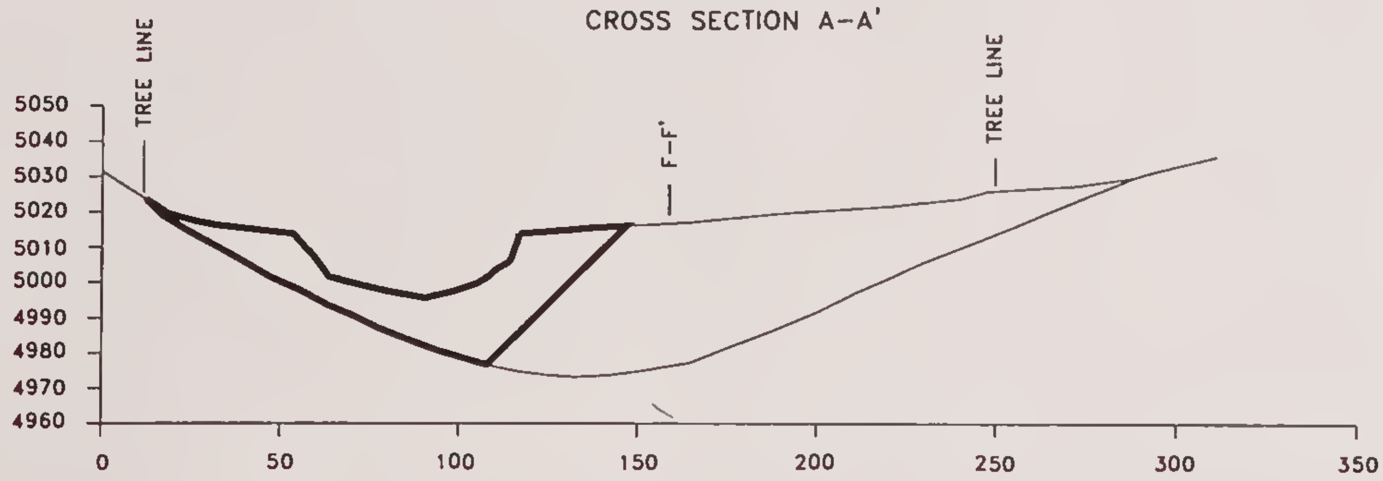

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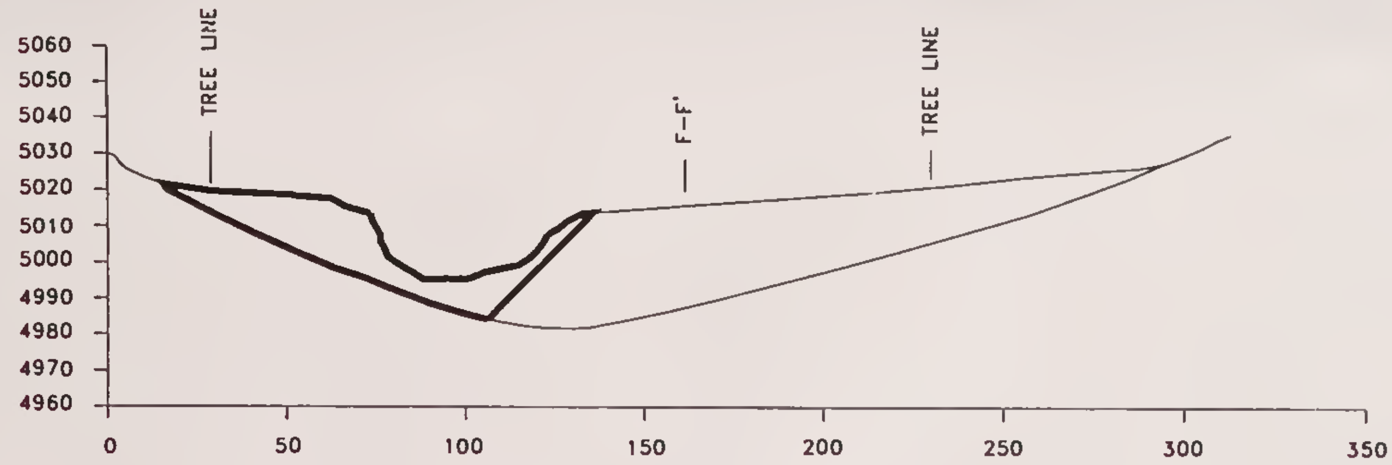

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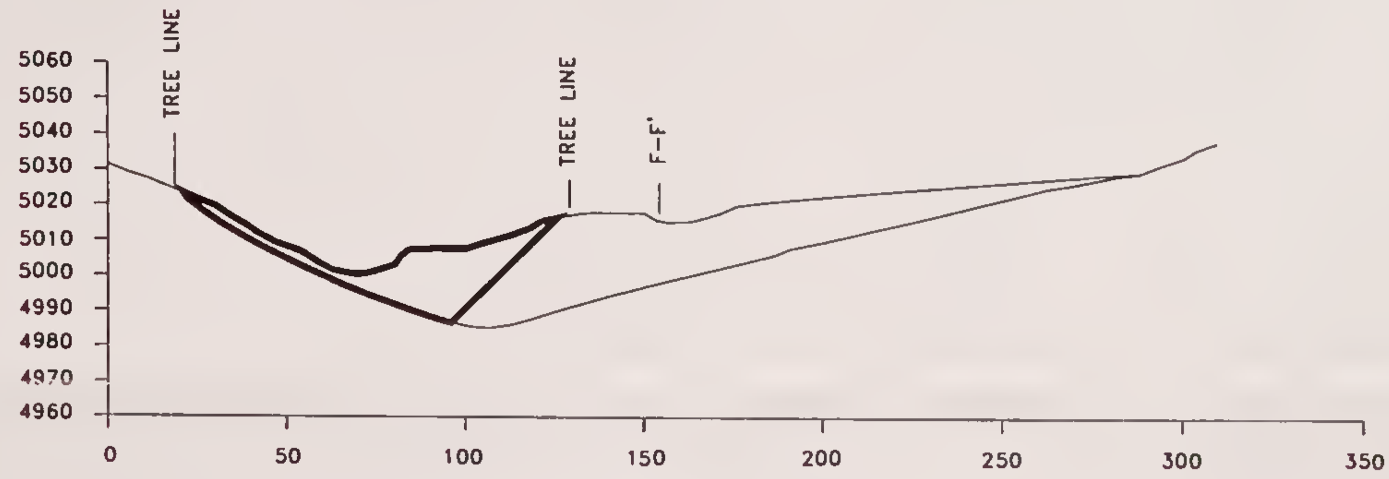

CROSS SECTION D-D'

LEGEND

TAILINGS
REMOVAL

REFER TO SHEET 9 FOR
SECTION LOCATIONS

OLYMPUS
ENVIRONMENTAL, INC.

TAILINGS REMOVAL
SECTIONS (TP-4)
PIEGAN-GLOSTER MILLSITE
LEWIS AND CLARK COUNTY
MONTANA

Design: KSR	Drawn: DGW				SHEET
Checked: DGW	Date: 6/13/96				
Approved: KSR	Revision	By	Date		11 OF 18
Job No: 95-5760					
CAD File: tp4_remov					
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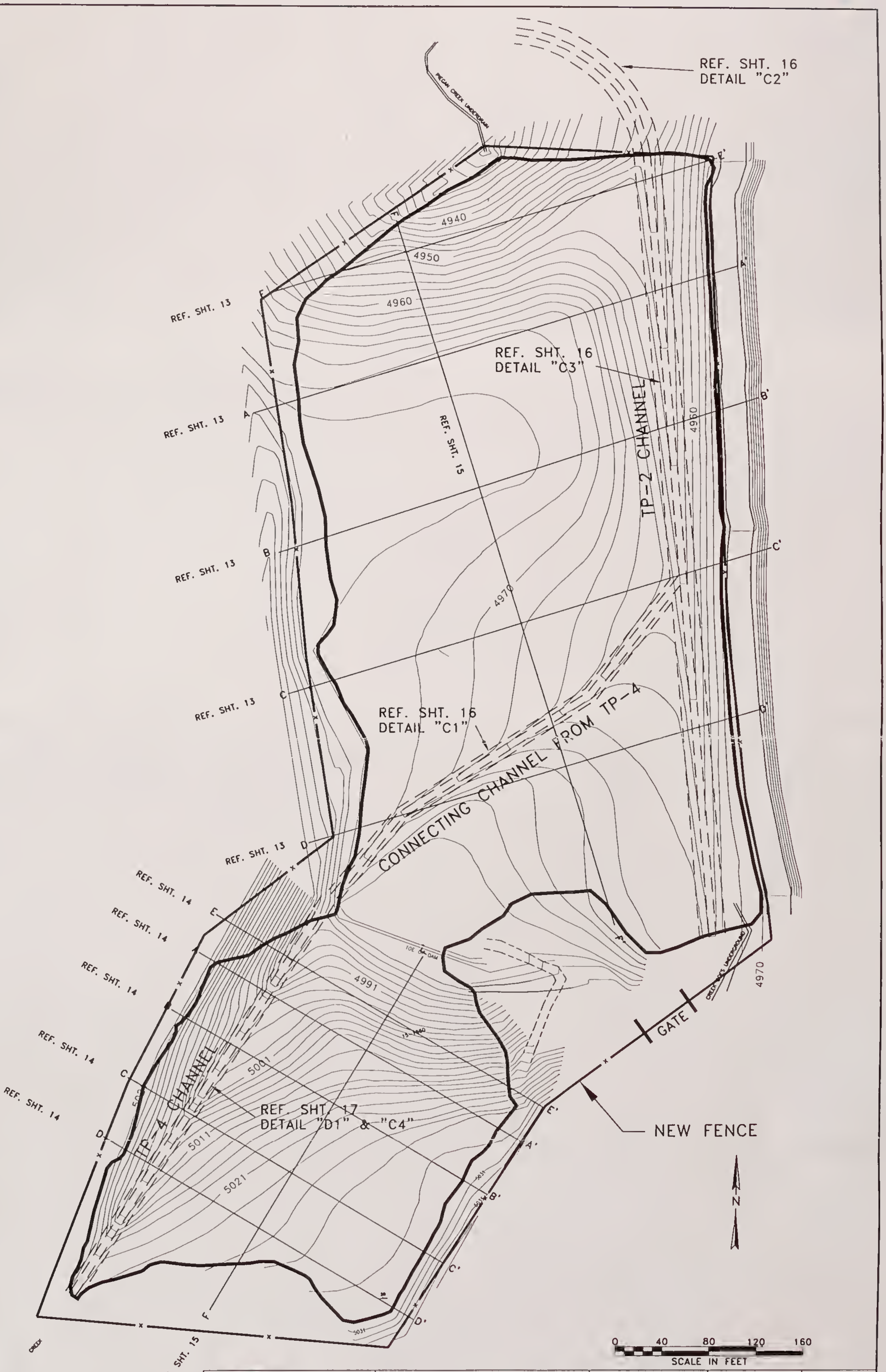

OLYMPUS ENVIRONMENTAL, INC.

TAILINGS GRADING AND FENCING PLAN (TP-2 & TP-4)

PIEGAN-GLOSTER MILLSITE

LEWIS AND CLARK COUNTY
MONTANA

Design: OGW	Drawn: OGW
Checked: KSR	Date: 6/11/96
Approved: KSR	Revision / By / Date
Job No: 95-5760	
CAD File: tp2&4_new	
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SHEET
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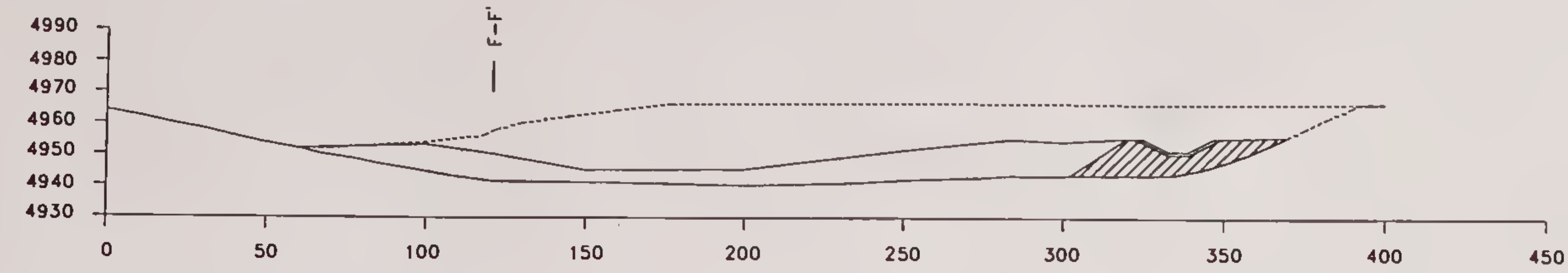

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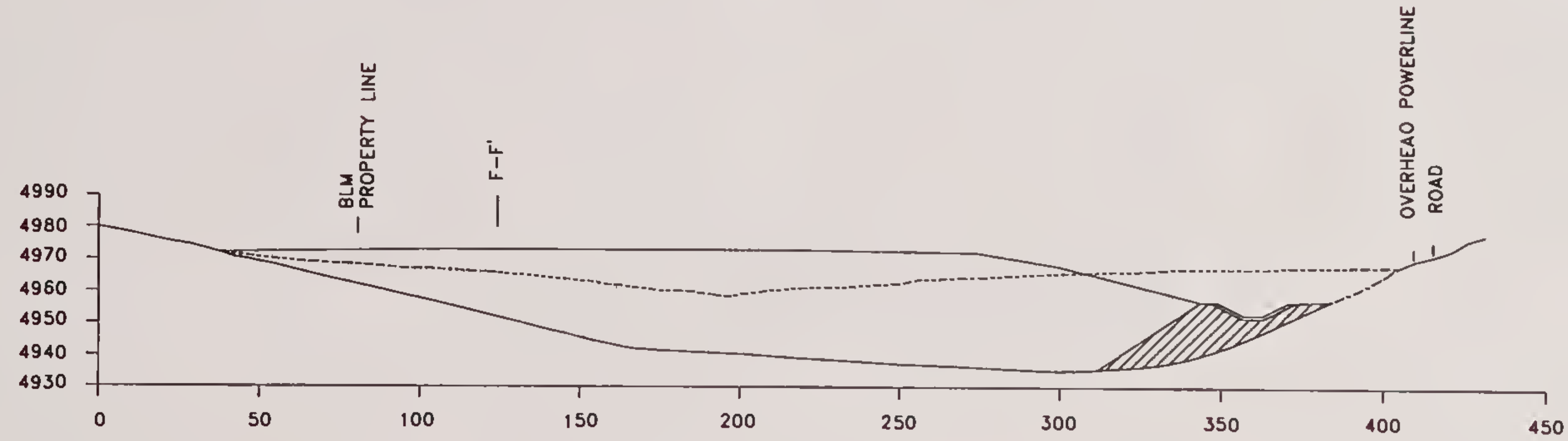

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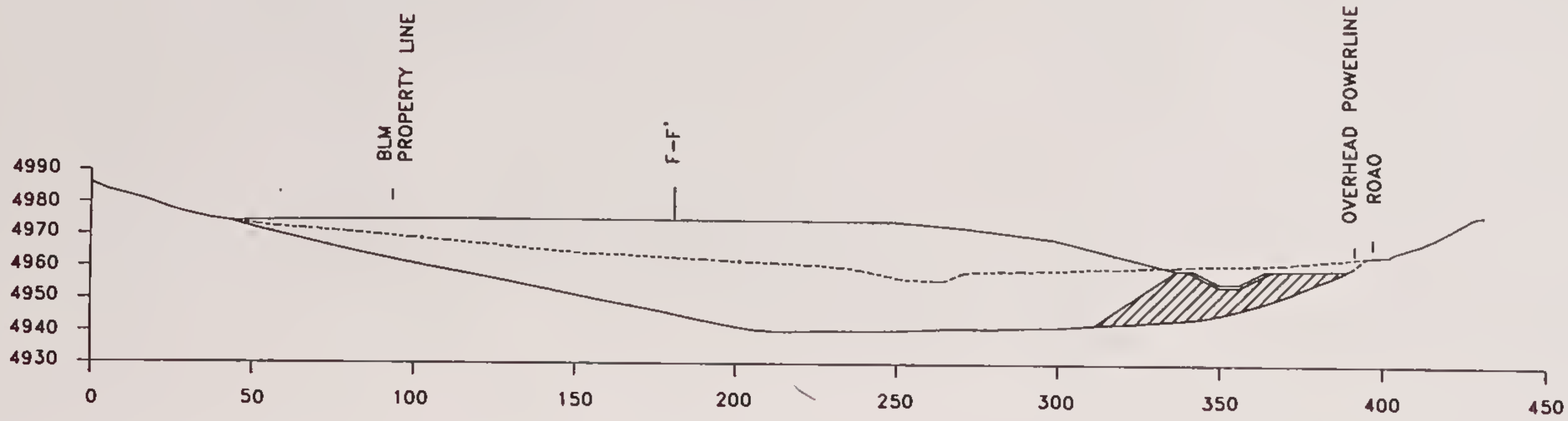

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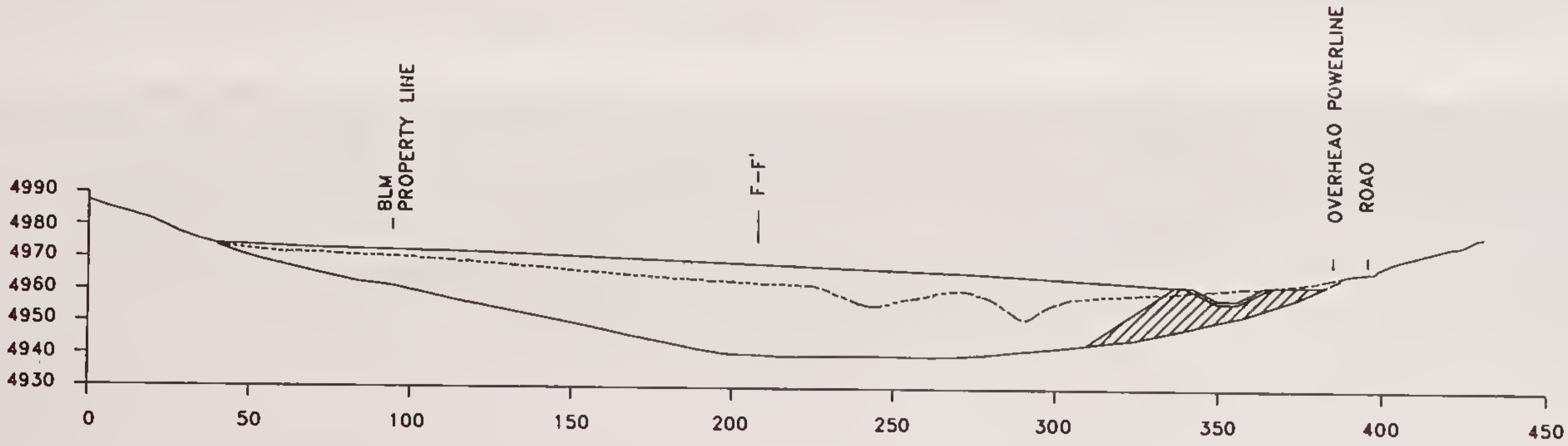

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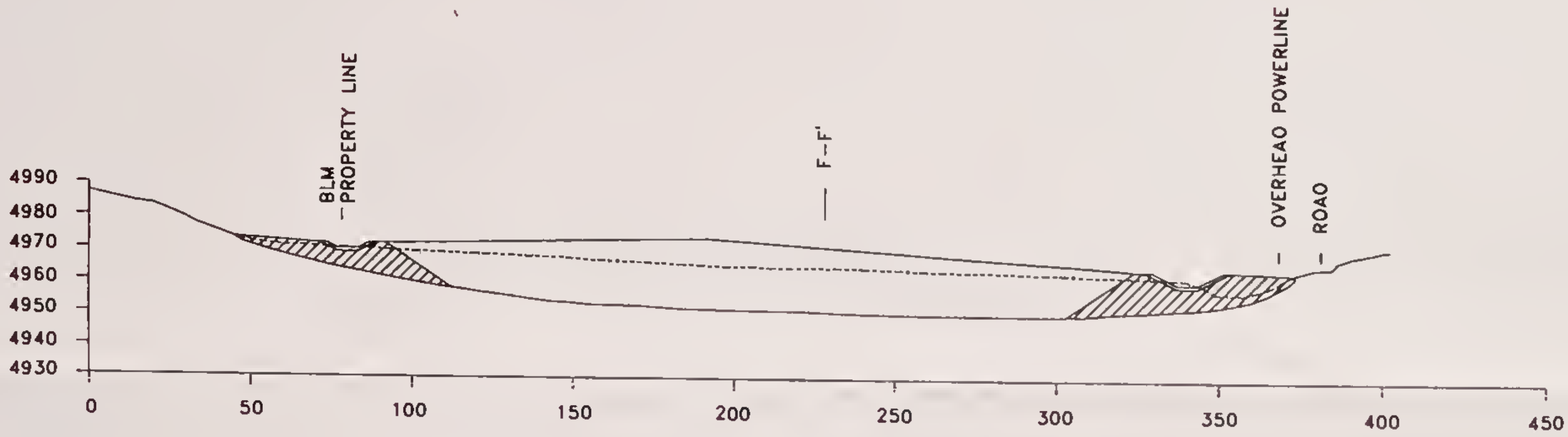
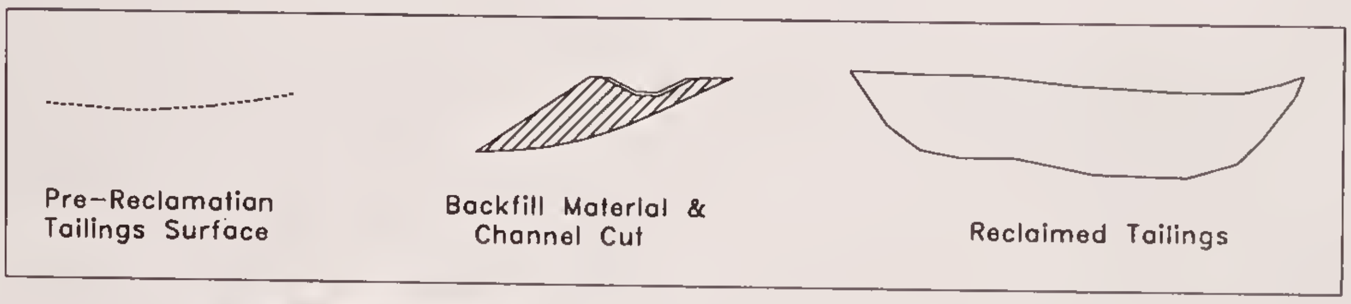


CROSS SECTION D-D'

LEGEND


Pre-Reclamation Tailings Surface
Backfill Material & Channel Cut
Reclaimed Tailings

REFER TO SHEET 12 FOR SECTION LOCATIONS

OLYMPUS ENVIRONMENTAL, INC.

BACKFILL & TAILINGS GRADING SECTIONS (TP-2)
PIEGAN-GLOSTER MILLSITE
LEWIS AND CLARK COUNTY
MONTANA

Design: KSR
Checked: DGW
Approved: KSR
Job No: 95-5760
CAD File: tp2_chan
Scale: AS SHOWN

Drawn: DGW
Date: 6/11/96

Revision	By	Date

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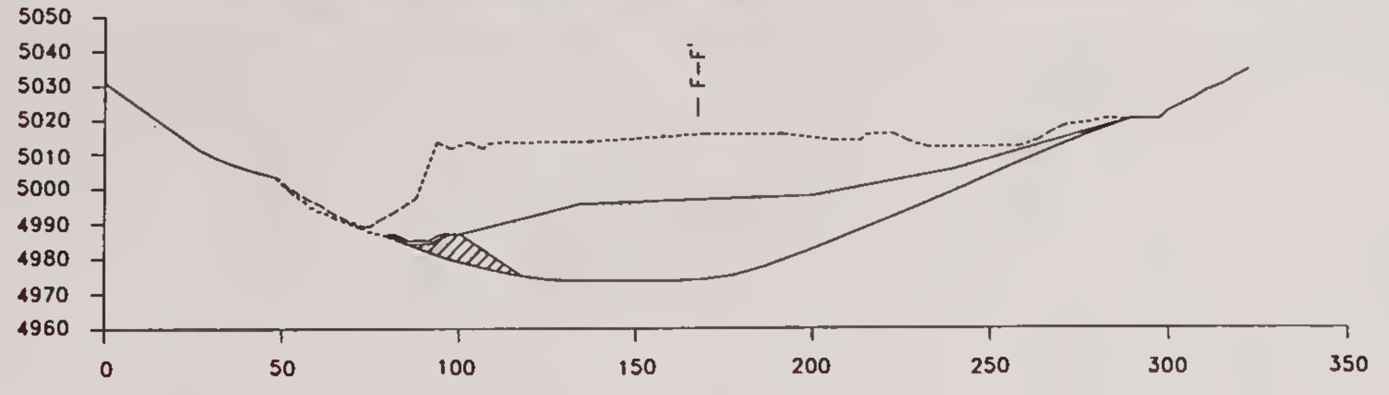
13 OF 18



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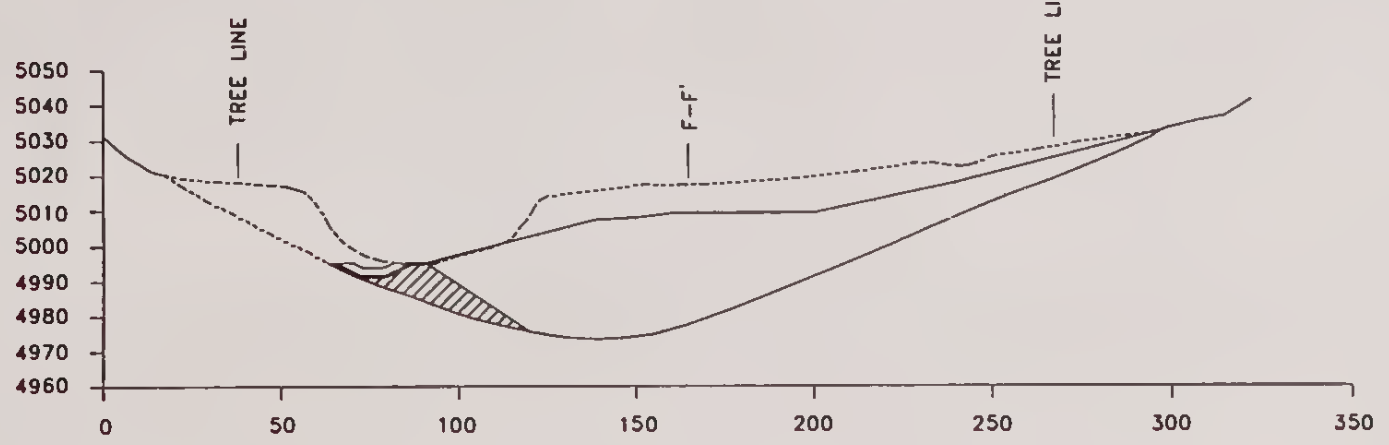

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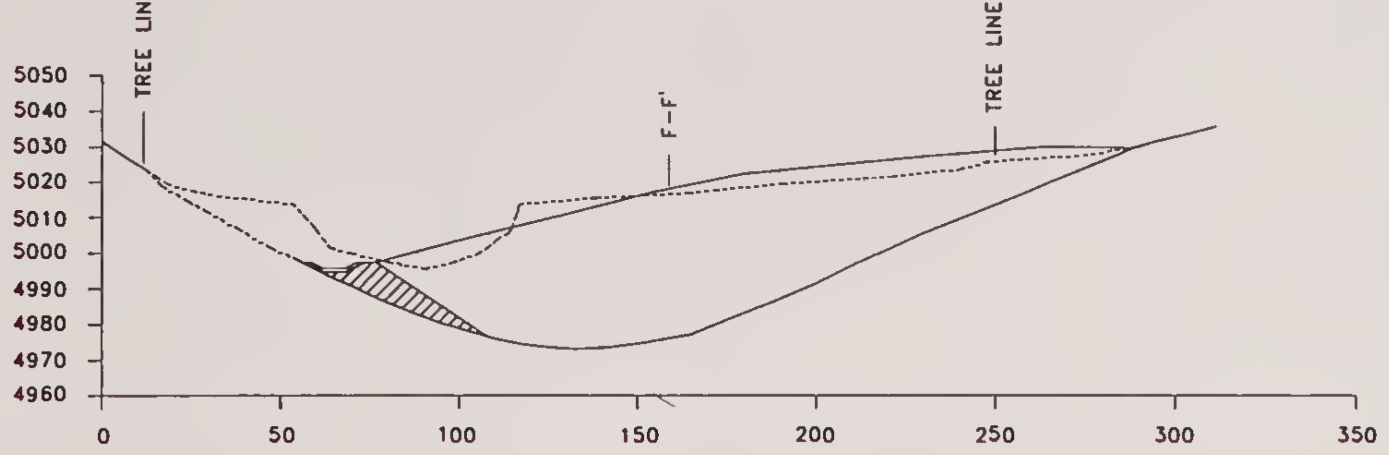

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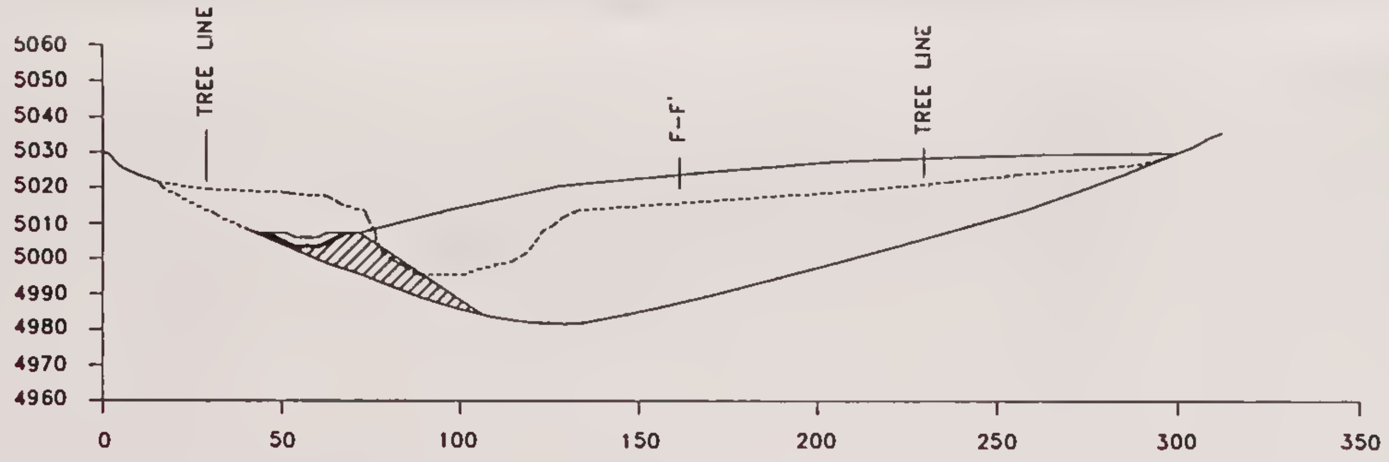

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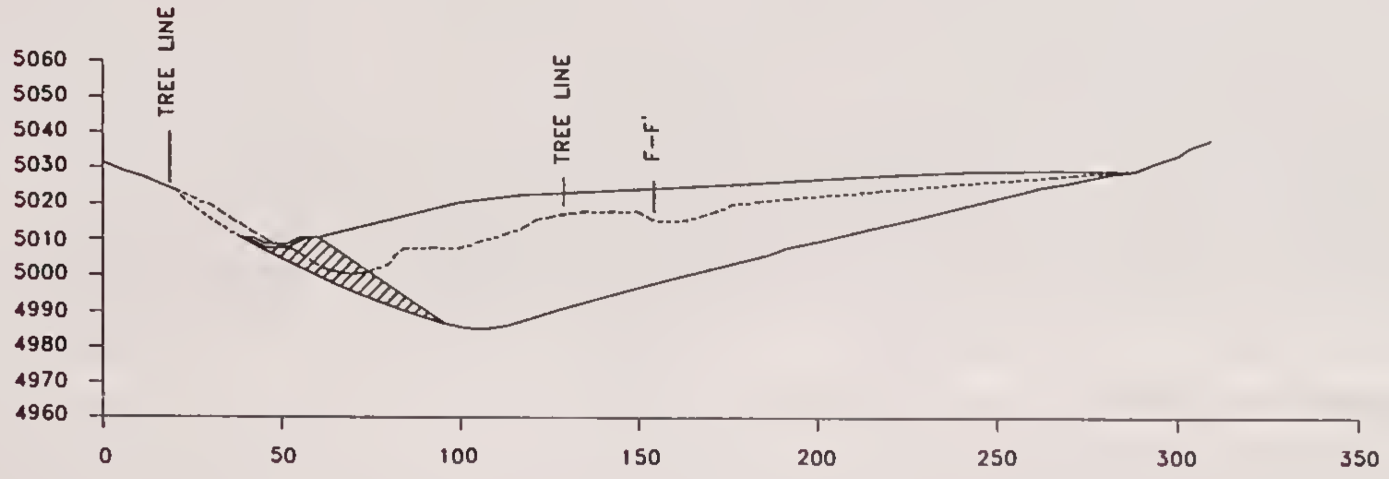
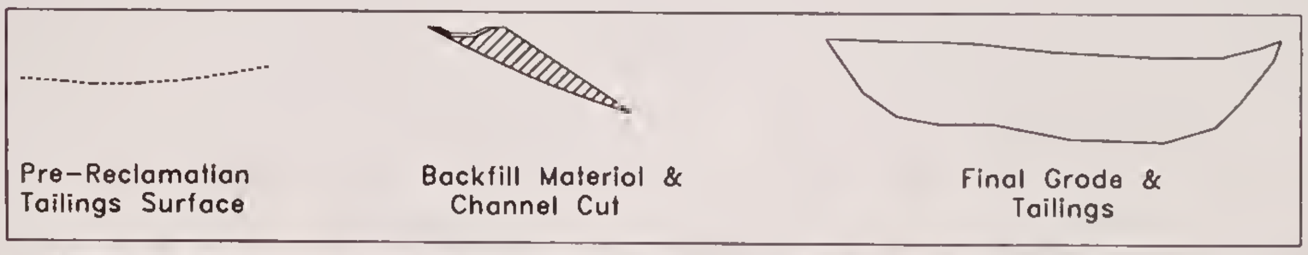


CROSS SECTION D-D'

LEGEND


Pre-Reclamation Tailings Surface
Backfill Material & Channel Cut
Final Grade & Tailings

REFER TO SHEET 12 FOR SECTION LOCATIONS

OLYMPUS ENVIRONMENTAL, INC.

BACKFILL & TAILINGS GRADING SECTIONS (TP-4)
PIEGAN-GLOSTER MILLSITE
LEWIS AND CLARK COUNTY
MONTANA

Design: KSR	Drown: DGW			SHEET
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Approved: KSR	Revision	By	Date	
Job No: 5676				14 OF 18
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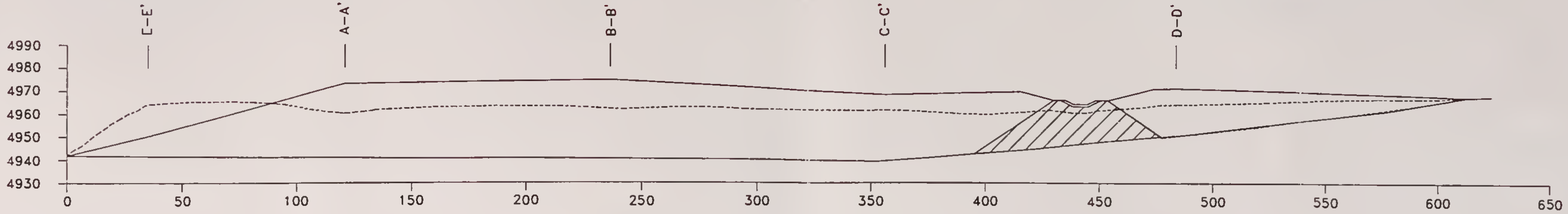
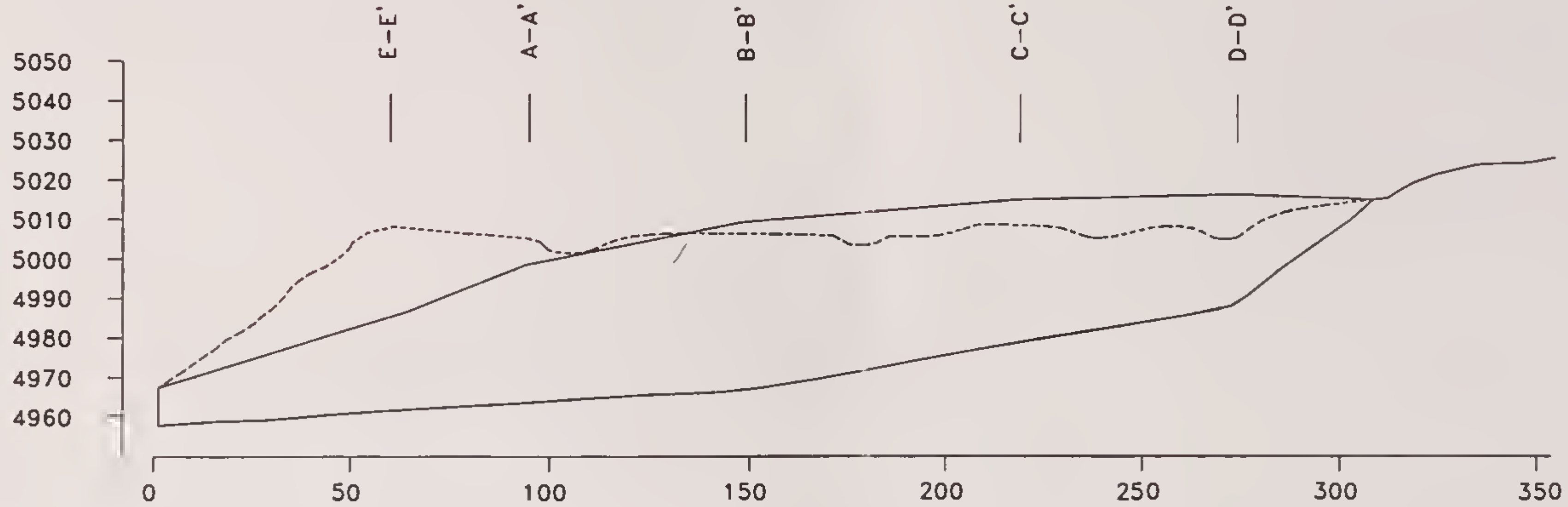


TAILINGS PILE 2 – LONGITUDINAL SECTION F–F'



TAILINGS PILE 4 – LONGITUDINAL SECTION F–F'

LEGEND

- ┈ Pre–Reclamation Tailings Surface
- ▨ Backfill Material & Channel Cut
- ▭ Reclaimed Tailings

OLYMPUS
ENVIRONMENTAL, INC.

TAILINGS GRADING
LONGITUDINAL SECTIONS

PIEGAN–GLOSTER MILLSITE

LEWIS AND CLARK COUNTY
MONTANA

Design: DGW	Drawn: DGW				FIGURE
Checked: KSR	Date: 6/15/96				
Approved: KSR	Revision	By	Date		
Job No: 95–5760					15 OF 18
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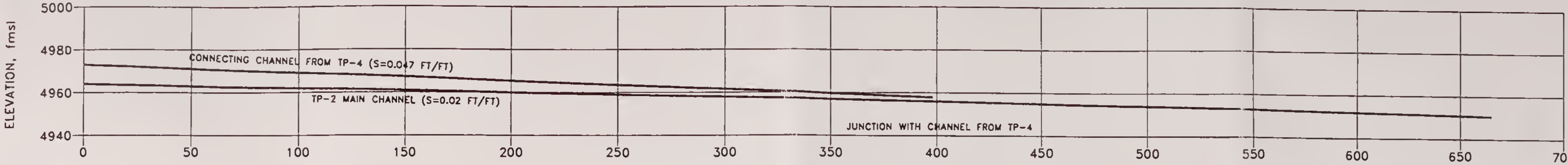
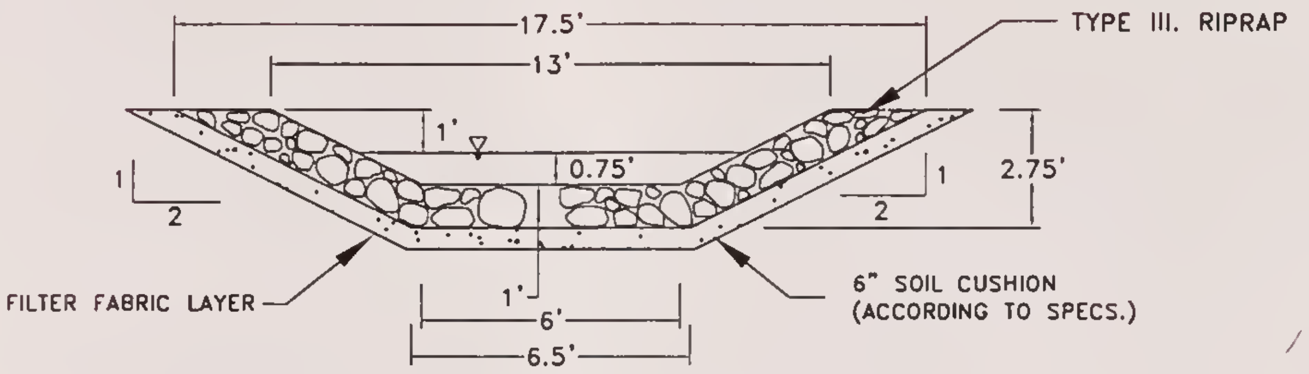
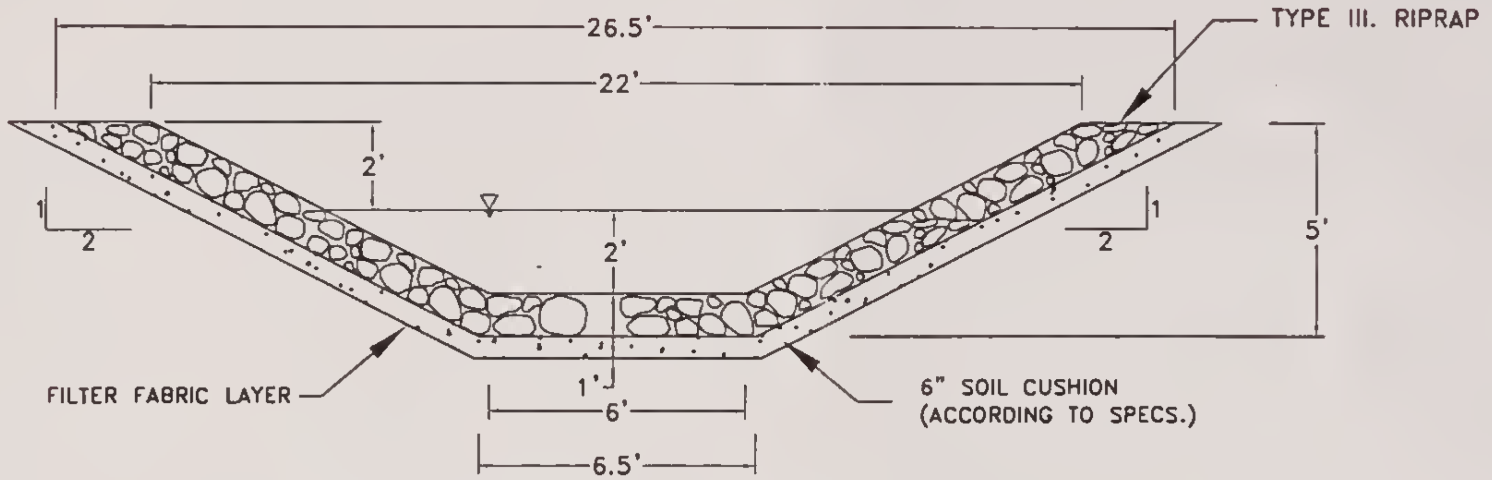


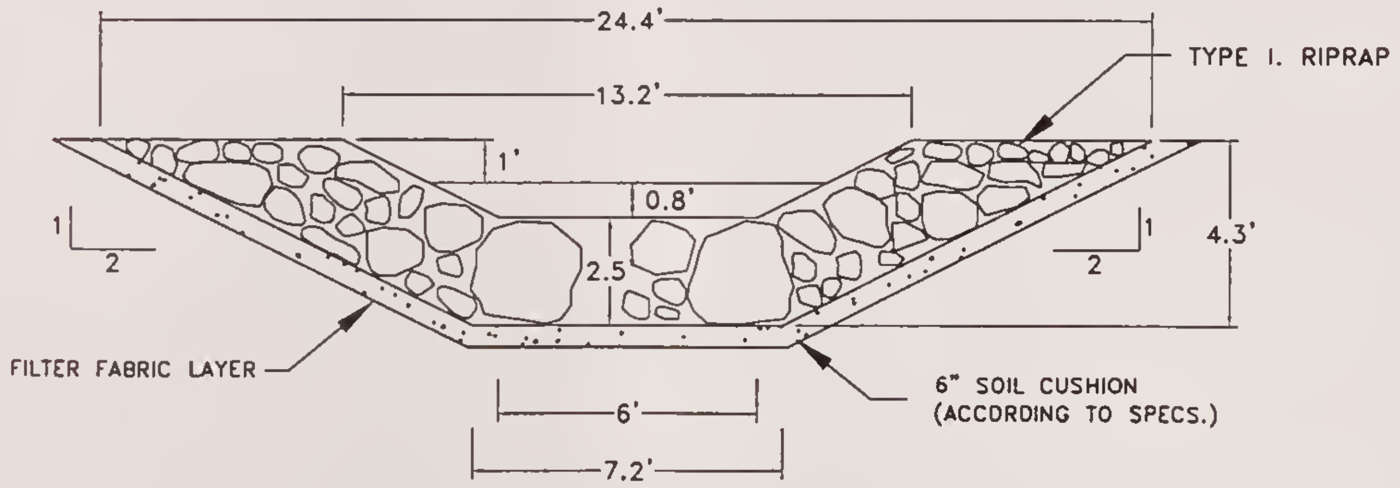
TP-2 CHANNEL ℄ PROFILES (Ref. Sheet 12 for Channel Location)



TP-2 CONNECTING CHANNEL FROM TP-4
DETAIL "C1"



TP-2 MAIN CHANNEL CROSS SECTION
DETAIL "C3"



TP-2 DAM SLOPE CHANNEL
DETAIL "C2"

OLYMPUS
ENVIRONMENTAL, INC.

STREAM CHANNEL
DETAILS (TP-2)

PIEGAN-GLOSTER MILLSITE

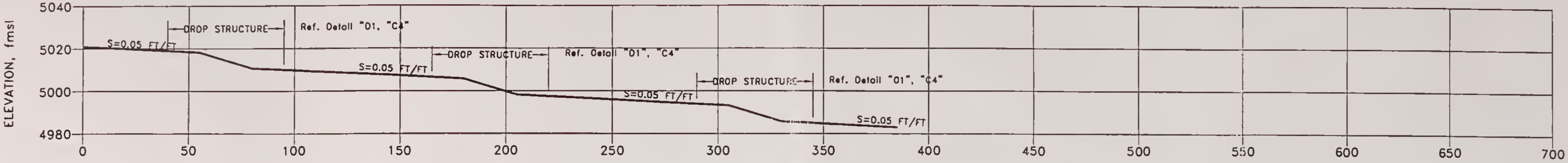
LEWIS AND CLARK COUNTY
MONTANA

Design: KSR
Checked: DGW
Approved: KSR
Job No: 95-5760
CAD File: tp2chan
Scale: AS SHOWN

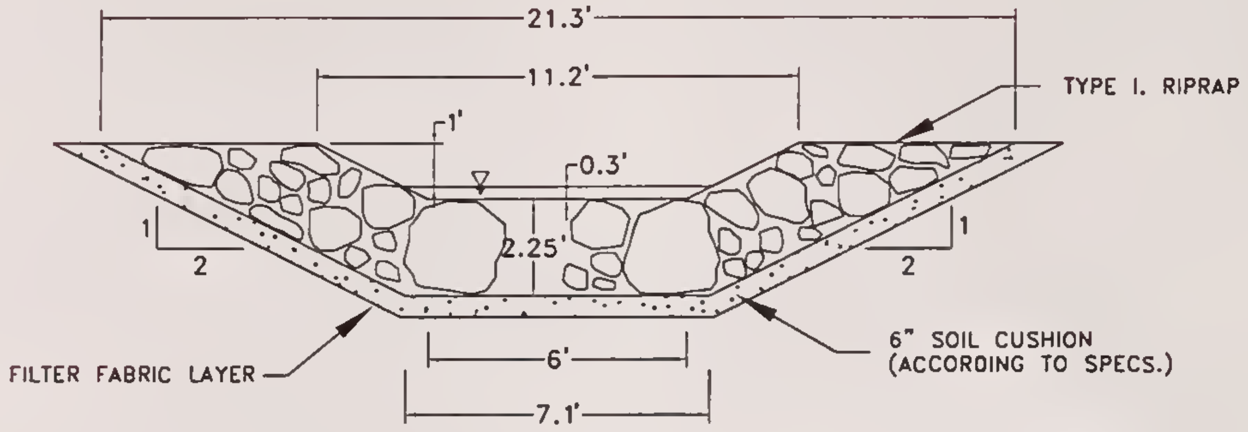
Drawn: DGW
Date: 6/13/96

Revision	By	Date

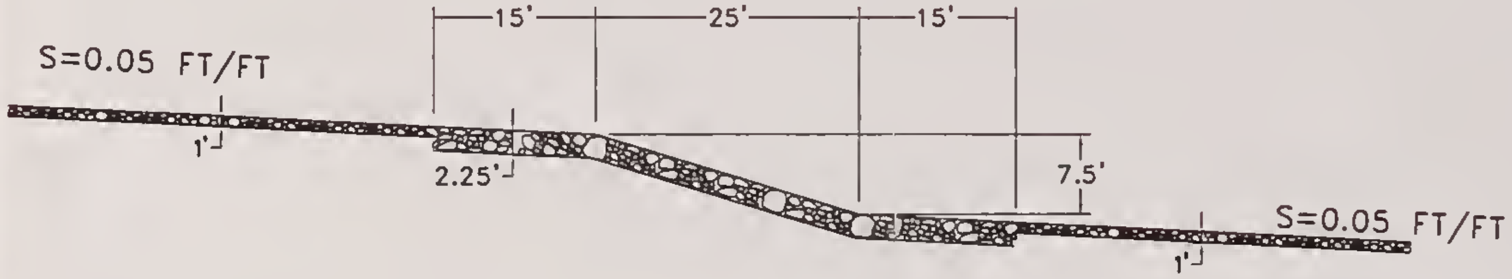
SHEET
16 OF 18



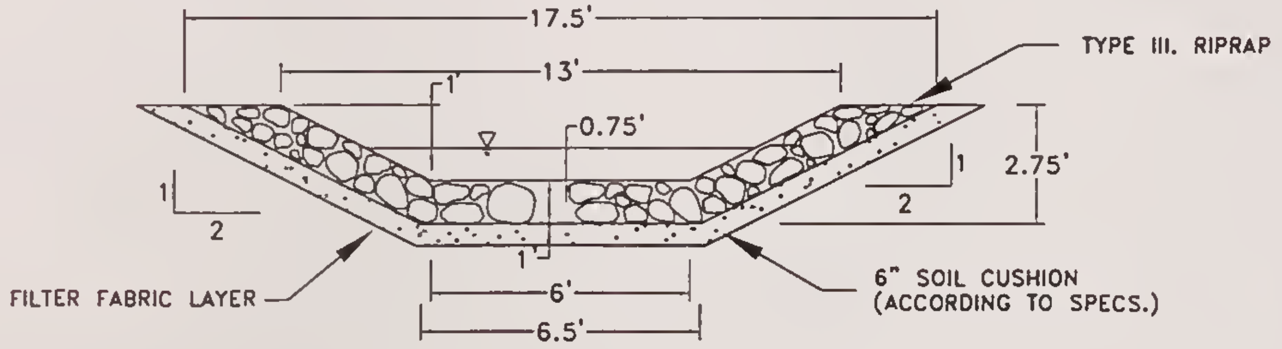
TP–4 CHANNEL ℄ PROFILE (Ref. Sheet 12 for Channel Location)



TP–4 DROP STRUCTURE CROSS SECTION
DETAIL "C4"



TP–4 DROP STRUCTURE PROFILE DETAIL
DETAIL "D1"



TP–4 CHANNEL CROSS SECTION
DETAIL "C5"

OLYMPUS
ENVIRONMENTAL, INC.

STREAM CHANNEL
DETAILS (TP–4)

PIEGAN–GLOSTER MILLSITE

LEWIS AND CLARK COUNTY
MONTANA

Design: KSR	Drown: DGW			SHEET
Checked: DGW	Date: 6/13/96			
Approved: KSR	Revision	By	Date	
Job No: 95–5760				17 OF 18
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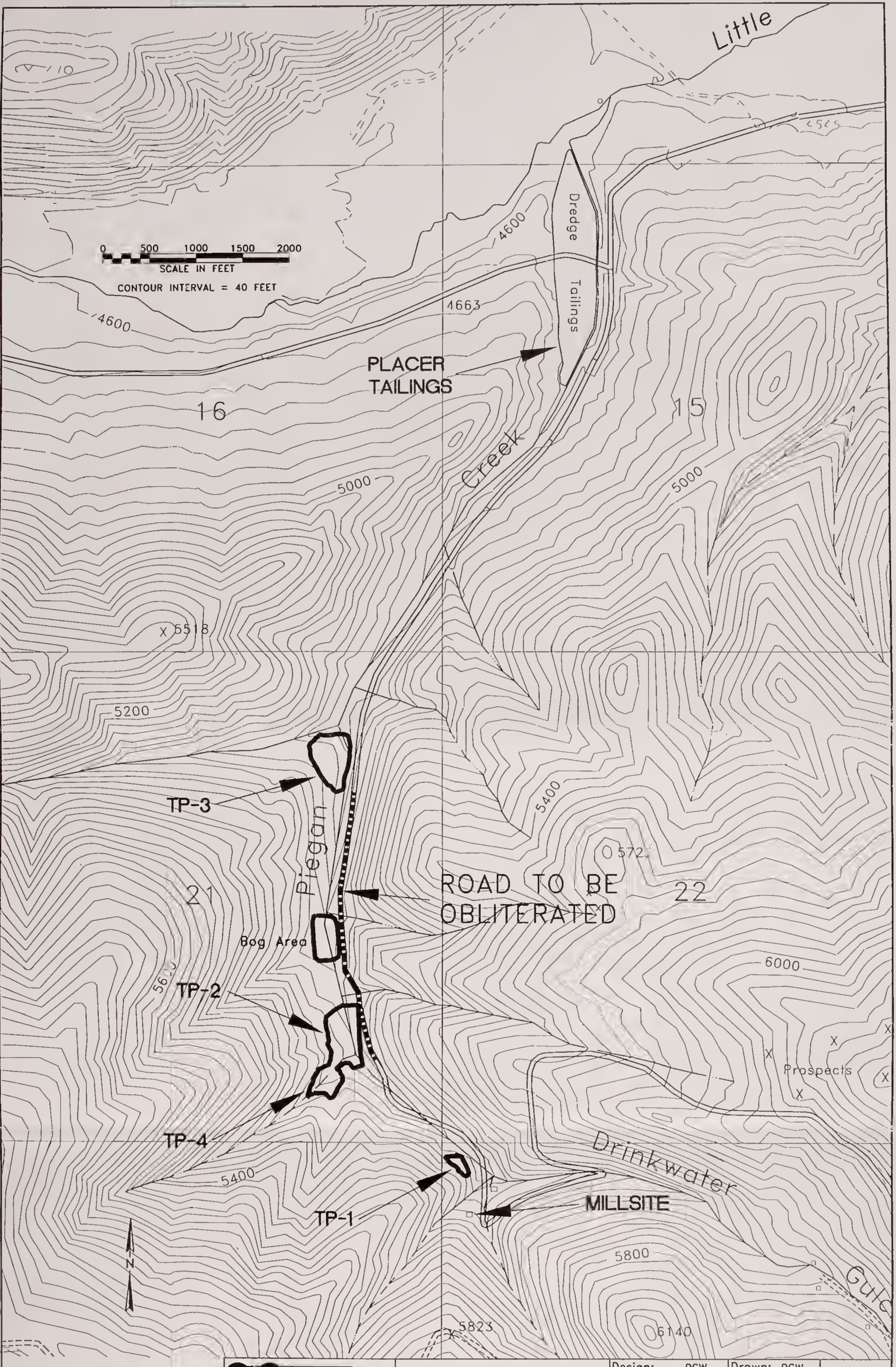

SOURCE: USGS QUADS
CANYON CREEK, MONT
GRANITE BUTTE, MONT

OLYMPUS
ENVIRONMENTAL, INC.

ROAD OBLITERATION PLAN

PIEGAN–GLOSTER MILLSITE
Lewis and Clark County
Montana

Design: DGW	Drawn: DGW				SHEET
Checked: KSR	Date: 6/17/96				
Approved: KSR	Revision	By	Date		
Job No: 95–5760					18 OF 18
CAD File: obliterate					
Scale: AS SHOWN					

APPENDIX I

PHOTOGRAPHS

Photo No.	Date	Description
1		View looking south at Piegan Creek running down ruts in the road in the bog area between TP-2 and TP-3 prior to the start of construction.
2	8/14/96	Looking north at road improvements in bog area between TP-2 and TP-3. Note the fill to raise the road grade and the slash windrow to protect Piegan Creek from sedimentation.
3		Looking southwest across TP-2 toward the TP-4 tailings dam prior to construction. Note the erosion cuts in TP-2.
4		Looking north-northeast along the axis of TP-2 at the underdrain sinkhole prior to construction.
5	8/20/96	Looking east at road construction adjacent to TP-2.
6	8/14/96	Excavator stuck in a slime pocket on TP-2
7	8/19/96	Looking southwest at excavation and grading of tailings on TP-2.
8	8/28/96	Looking south-southwest at grading of tailings adjacent to the main channel on TP-2.
9	8/28/96	Looking south across TP-2 (foreground) at construction at the base of TP-4 (background).
10	9/12/96	Temporary stream diversion on the road adjacent to TP-2 looking upstream (south).
11	9/12/96	Temporary stream diversion around TP-2 with filter fabric placed on the outfall slope to control erosion.
12	9/12/96	Looking south at the placement of riprap in the TP-2 main channel.
13	9/30/96	Looking south along the TP-2 main channel after completion.
14	9/30/96	TP-2 riprap-lined channel flowing into the Piegan Creek natural channel just north of the TP-2 dam.
15	10/2/96	Looking south at Piegan Creek flowing from the native stream into the TP-2 riprap-lined channel.
16	9/30/96	Looking east at the placement of slash windrows on the TP-2 dam slope.
17	9/30/96	Mulch staging area on TP-2.
18	10/2/96	Hydroseeding of the road slope adjacent to TP-2.

Photo No.	Date	Description
19	10/9/96	Looking northwest at the application of straw mulch TP-2.
20		Looking southwest at the completed channel connecting TP-2 and TP-4. Note the trees that were left in place on the TP-4 dam.
21		Looking southwest across TP-2 toward the TP-4 tailings dam after reclamation is complete. Compare with photo #3.
22	10/10/96	Looking north across TP-2 from the crest of the TP-4 dam after reclamation.
23		Aerial view of TP-2 looking southwest after reclamation.
24		View of the collapsed Piegan-Gloster Mill near the headwaters of Piegan Creek prior to reclamation.
25		Aerial view of the mill after reclamation.
26	9/30/96	Piegan-Gloster Mill foundation after removal of the mill timber debris. Compare with photo #24.
27		Looking northeast along the axis of the main erosion channel through TP-4 prior to reclamation.
28	8/20/96	Looking southwest toward the head of the drainage at the TP-4 temporary stream diversion ditch and conveyance pipe.
29	8/19/96	Looking northeast across TP-4 at scrapers placing tailings on top of TP-4 and an excavator sloping back the dam face.
30	8/20/96	Looking southwest at scrapers cutting down the west bank of the main erosion cut on TP-4.
31	8/20/96	Looking south at TP-4 as a scraper hauls tailings from west bank of main erosion cut on TP-4 to the east side of TP-4.
32	8/20/96	Looking northeast along the axis of TP-4 at scrapers removing tailings from the west side of TP-4 (left) and placing tailings on the east side (right).
33	8/19/96	Looking northwest across the axis of the TP-4 dam at an excavator sloping back the dam face (foreground) and an excavator clearing trees and brush (background).
34	8/21/96	Looking southwest along the TP-4 channel alignment at a tailings slope failure.

Photo No.	Date	Description
35	8/28/96	Looking southwest at the completed tailings excavation, grading, and channel subgrade on TP-4.
36	9/6/96	Looking southwest at the filter fabric and riprap placement in the TP-4 channel. Note the drop structure in the center of the photograph.
37	9/6/96	Construction of a drop structure in the TP-4 channel. Note the row of large riprap (2-2.5 feet diameter) anchoring the base of the drop structure.
38	9/12/96	Looking southwest at a completed drop structure in the TP-4 channel.
39	10/22/96	Looking northeast along the axis of the completed TP-4 riprap-lined channel. Note the graded tailings, hydroseeded, fertilized and hydromulched slopes, and barbed-wire fence. Compare with photo #27.
40	9/12/96	Looking southwest at the completed riprap-lined channel connecting TP-4 with the TP-2 main channel.
41	9/30/96	Looking east-northeast at the riprap-lined channel connecting TP-4 with the TP-2 main channel. Note the bulldozer spreading cover soil in the background.
42	9/30/96	Looking south-southwest at the TP-4 dam after grading and contouring. Note the bulldozer tracking the slopes prior to hydroseeding and the trees that were left in place on the dam.
43	10/1/96	Hydroseeding of the native slope on the west side of the TP-4 channel after the removal of tailings. Note the depth of tailings removal as evidenced by the height of the exposed slope.
44	10/2/96	Close up of the TP-4 dam after hydroseeding. Note the depressions from the bulldozer tracks which reduce surface runoff, provide a good seed bed, and trap soil moisture for revegetation.
45	10/22/96	Looking east at the runon control ditch with erosion control mat across the south end of TP-4. Note that the ditch discharges into the TP-4 riprap-lined channel in the bottom of the photograph.
46	10/22/96	An overview of TP-4 (background) and the south end of TP-2 (foreground) looking south-southwest after grading, contouring, seeding, fertilizing, and mulching. Note the contouring of the tailings slopes, the trees left in place on the dam face, the slash filter windrows which provide erosion protection, the riprap-lined channel, and the straw mulch placed on TP-2. Compare with photo #3.

Photo No.	Date	Description
47	10/2/96	An overview of TP-4 looking east from the ridge above TP-4. Note the hydroseeder working on the top of TP-4.
48		Aerial view of TP-2 and TP-4 looking to the northeast.
49		Tailings pile TP-3 looking from the dam area to the southwest along the main erosion channel prior to reclamation.
50		Looking north-northwest along the axis of the main TP-3 erosion channel at the area where the tailings dam has been breached.
51	10/1/96	Looking north-northwest at the trench excavation and pipe installation for the TP-3 temporary stream diversion.
52	10/2/96	Looking south-southwest at the TP-3 temporary stream diversion pipe.
53	10/9/96	Looking south at the outfall of the TP-3 temporary stream diversion. Note the placement of geotextile filter fabric to protect the outfall slope from erosion.
54		An aerial overview looking southeast at construction activities on TP-3. Note the temporary diversion along the lower right of the photograph, the excavators removing tailings along the main TP-3 erosion channel, and the wet tailings being graded for air drying on the center of the tailings pile.
55	9/30/96	Bulldozer at work sloping back the TP-3 tailings dam.
56	10/9/96	Looking west at the TP-3 dam after grading and contouring.
57	10/2/96	Looking north-northeast at tailings excavation and removal from the main TP-3 erosion channel.
58	10/2/96	Looking south at tailings excavation and removal from the main TP-3 erosion channel. Note the bulldozer grading the tailings on the main portion of TP-3.
59	10/9/96	Looking south at the grading and preparation of the TP-3 channel subgrade. Note that the channel sidewalls are constructed with compacted backfill from road construction embankment and provide a buffer between the stream channel and the tailings.
60	10/10/96	Looking south at the completed TP-3 channel subgrade prior to filter fabric and riprap placement. Note the gentle tailings slopes (approximately 5:1) on the right.
61	10/10/96	Looking east across TP-3 after the completion of tailings grading and contouring.

Photo No.	Date	Description
62	10/14/96	Looking south-southwest at filter fabric placed in the TP-3 channel prior to riprap placement.
63	10/15/96	Looking south at riprap placement in the TP-3 channel. Note the scraper hauling cover soil in the upper left side of the photo.
64	10/15/96	Loading riprap into an articulating rock truck from the stockpile north of TP-3.
65	10/14/96	Looking north-northwest at riprap being delivered and placed in the TP-3 channel.
66	10/15/96	Looking northwest at riprap placement in the TP-3 channel.
67	10/16/96	Filter fabric placed in the key trench at the upstream end of the TP-3 channel.
68	10/16/96	Looking north-northwest at the nearly completed TP-3 channel. Note the 2 to 2.5 feet diameter riprap and filter fabric placed in a key trench to armor the channel entrance.
69	10/16/96	Close up view of the 18-inch ceramic underdrain pipe at the upstream end of TP-3.
70	10/16/96	Close up view of the upstream end of the TP-3 underdrain pipe after plugging with concrete.
71		View from County Road 707 looking northeast at placer tailing piles on the north side of the road prior to borrowing cover soil.
72	10/15/96	View from County Road 707 looking northeast at cover soil borrow operations from the placer tailing piles. Note that the two western-most placer piles were flattened to provide scraper access.
73	10/15/96	View from County Road 707 looking north at cover soil being scraped from the flattened placer tailings piles.
74	10/15/96	Looking west at cover soil being spread on the TP-3 dam face.
75	10/22/96	Looking south at the completed riprap-lined channel through TP-3. Note the gentle tailings slope and the slash windrow to provide protection against erosion and sedimentation. Compare with photo #49.
76	10/22/96	Looking southeast at the runon control ditch on the west side of TP-3. Note the erosion control mat, which is covered with hydromulch, and the straw mulch being applied (upper left).
77	10/22/96	Looking to the northwest at straw mulch being applied on TP-3.

Photo No.	Date	Description
78	10/22/96	Overview of TP-3 looking to the north after the completion of reclamation. Note that straw mulch was applied on the flatter (center) portion of the tailings and hydromulch was applied on the steeper slopes.

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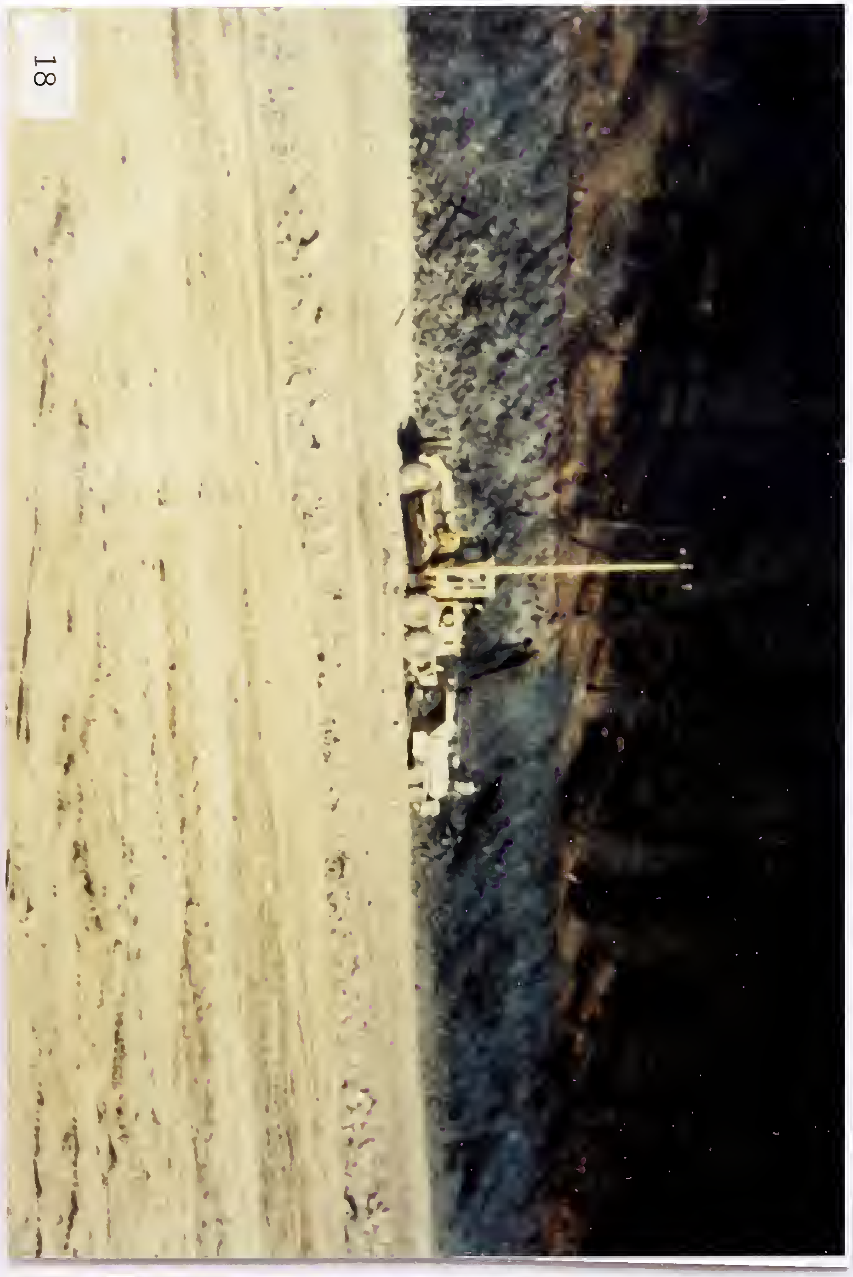

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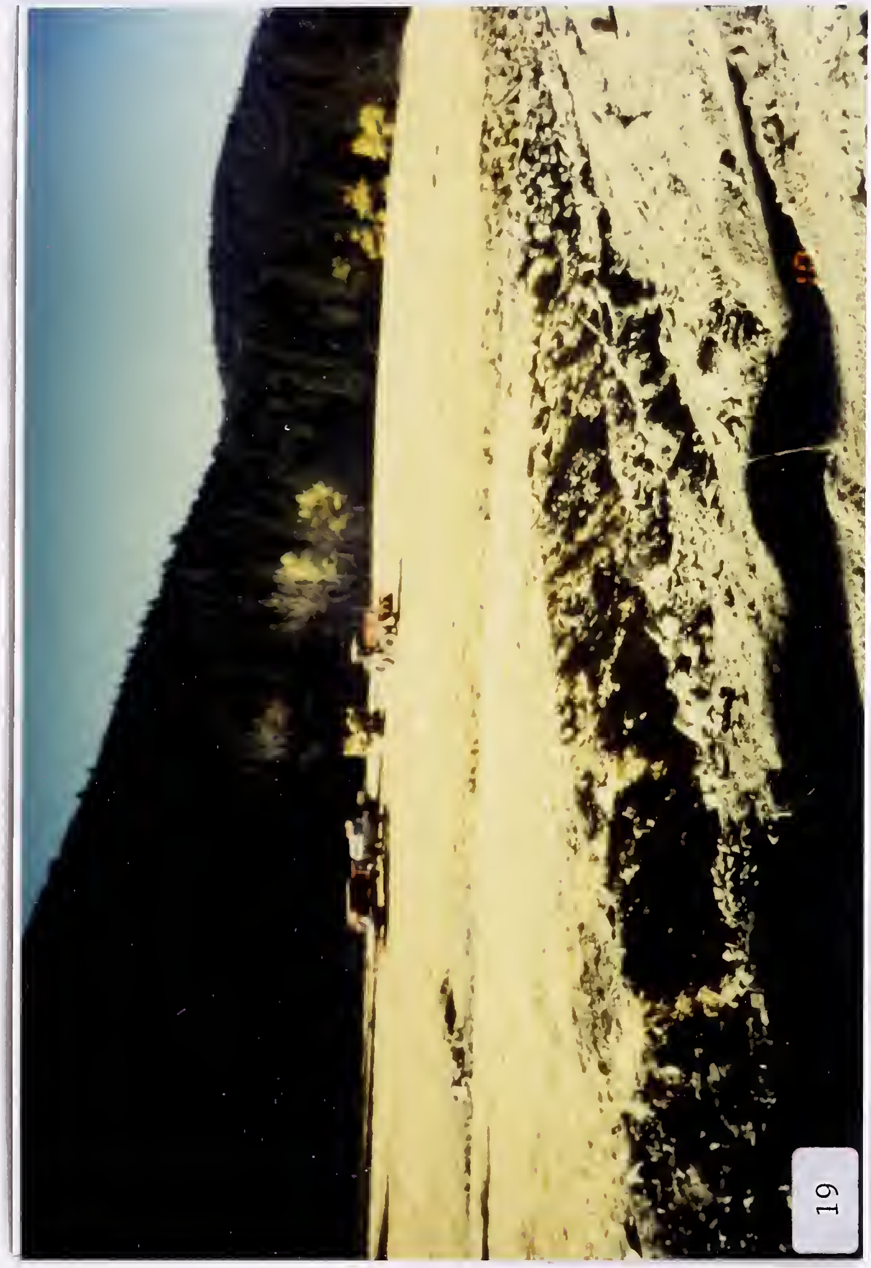

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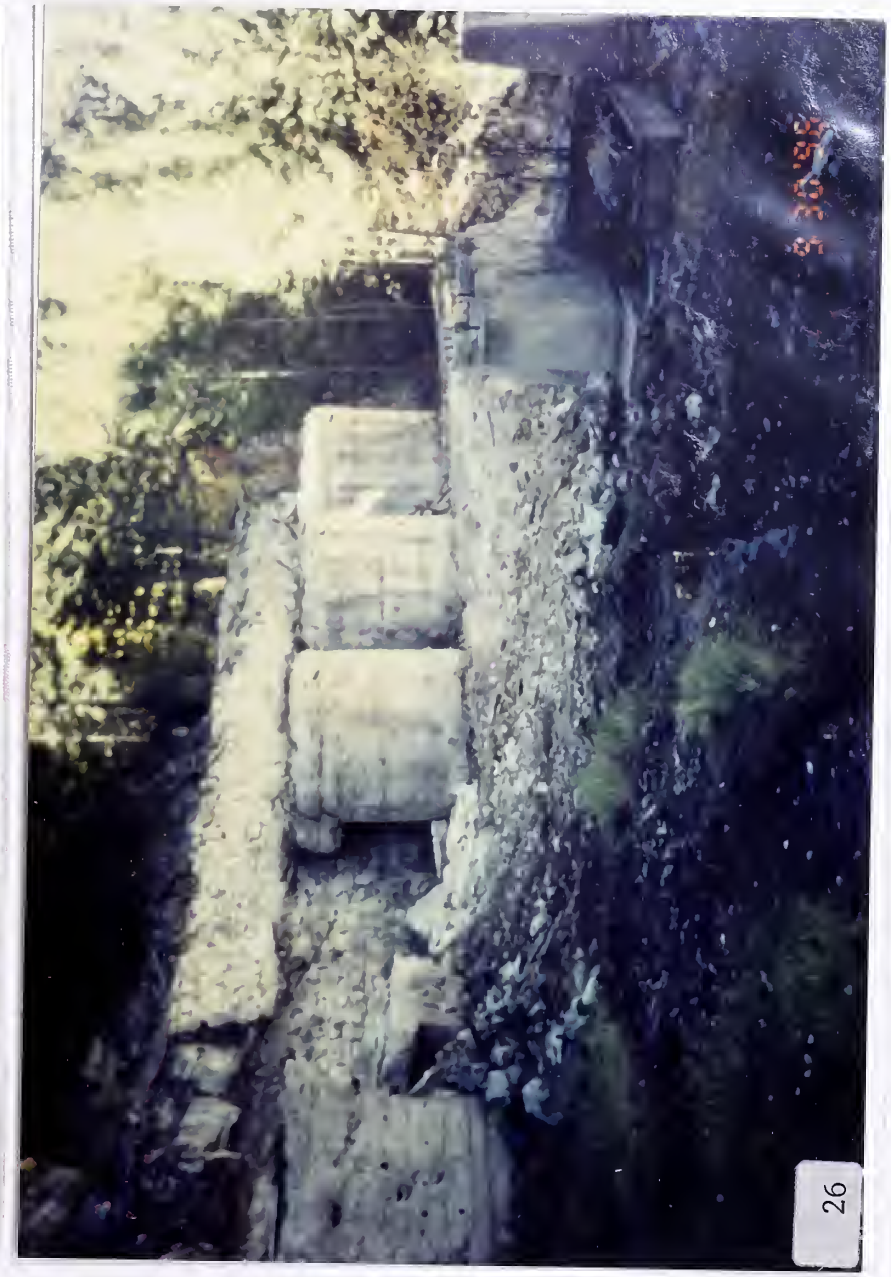

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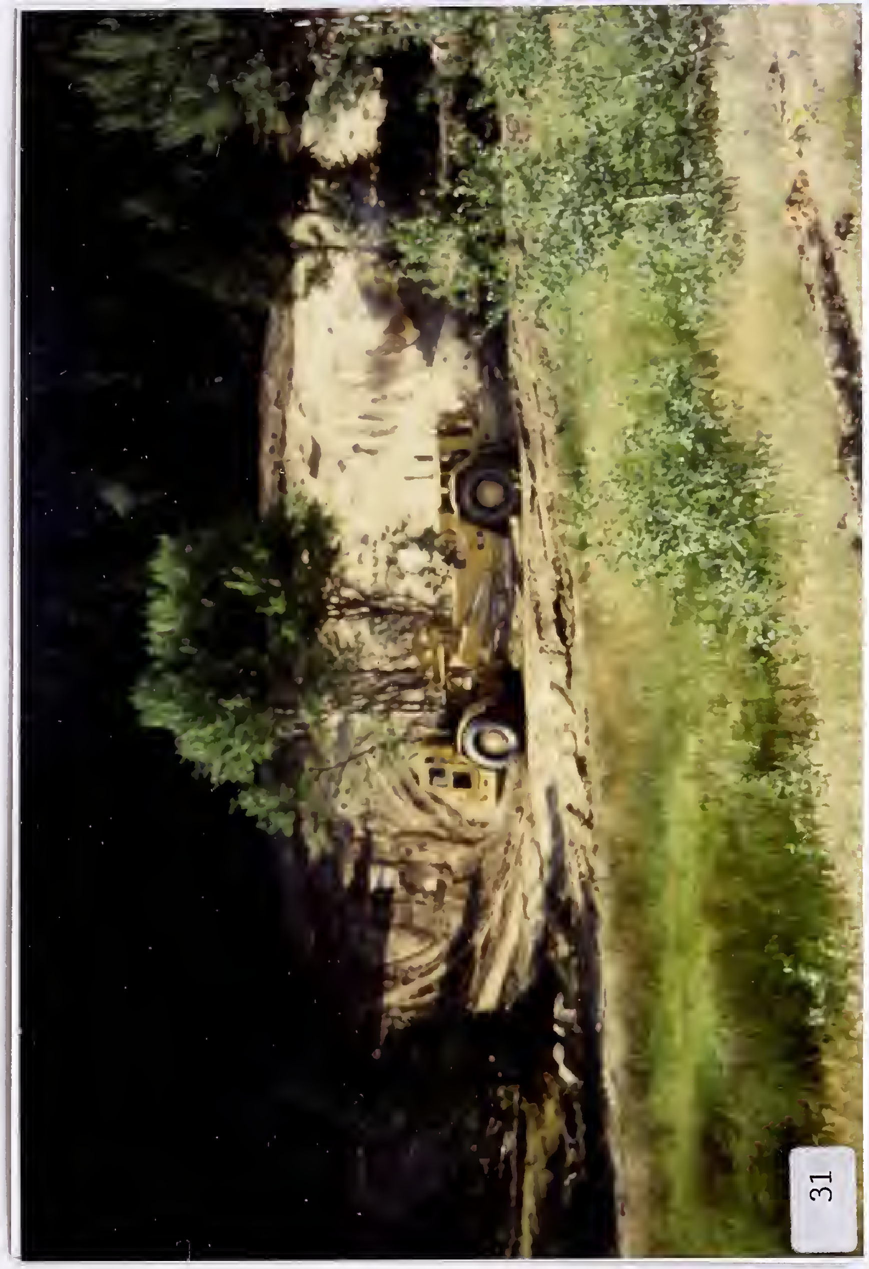

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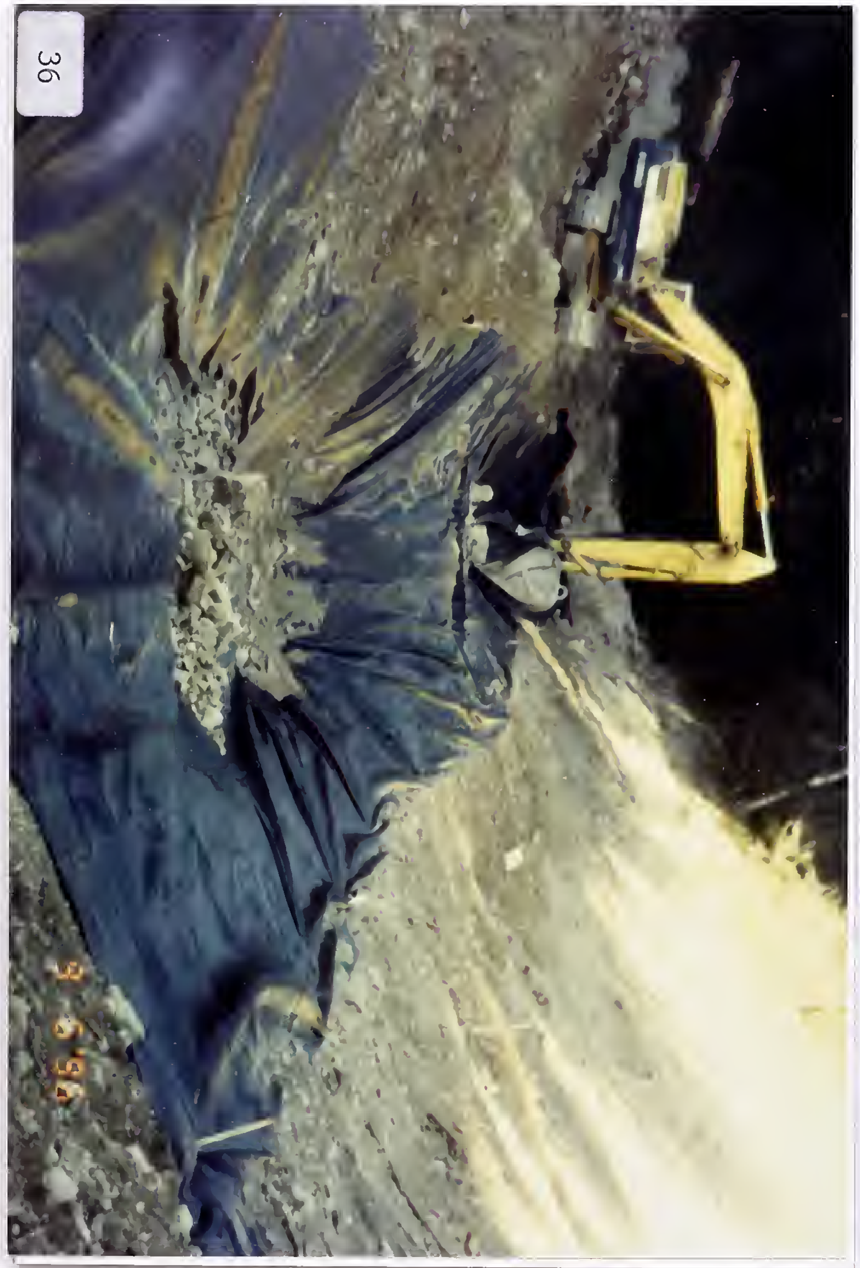

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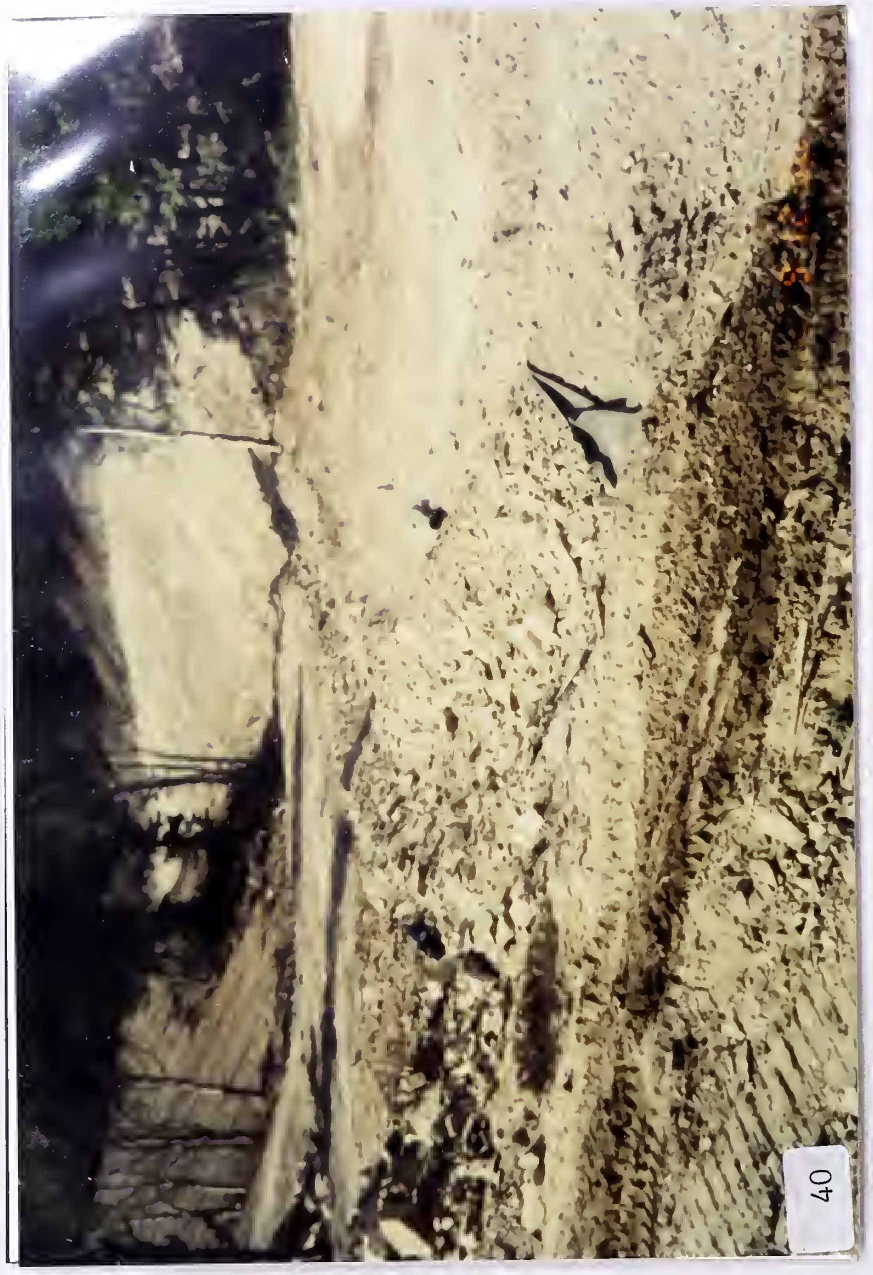
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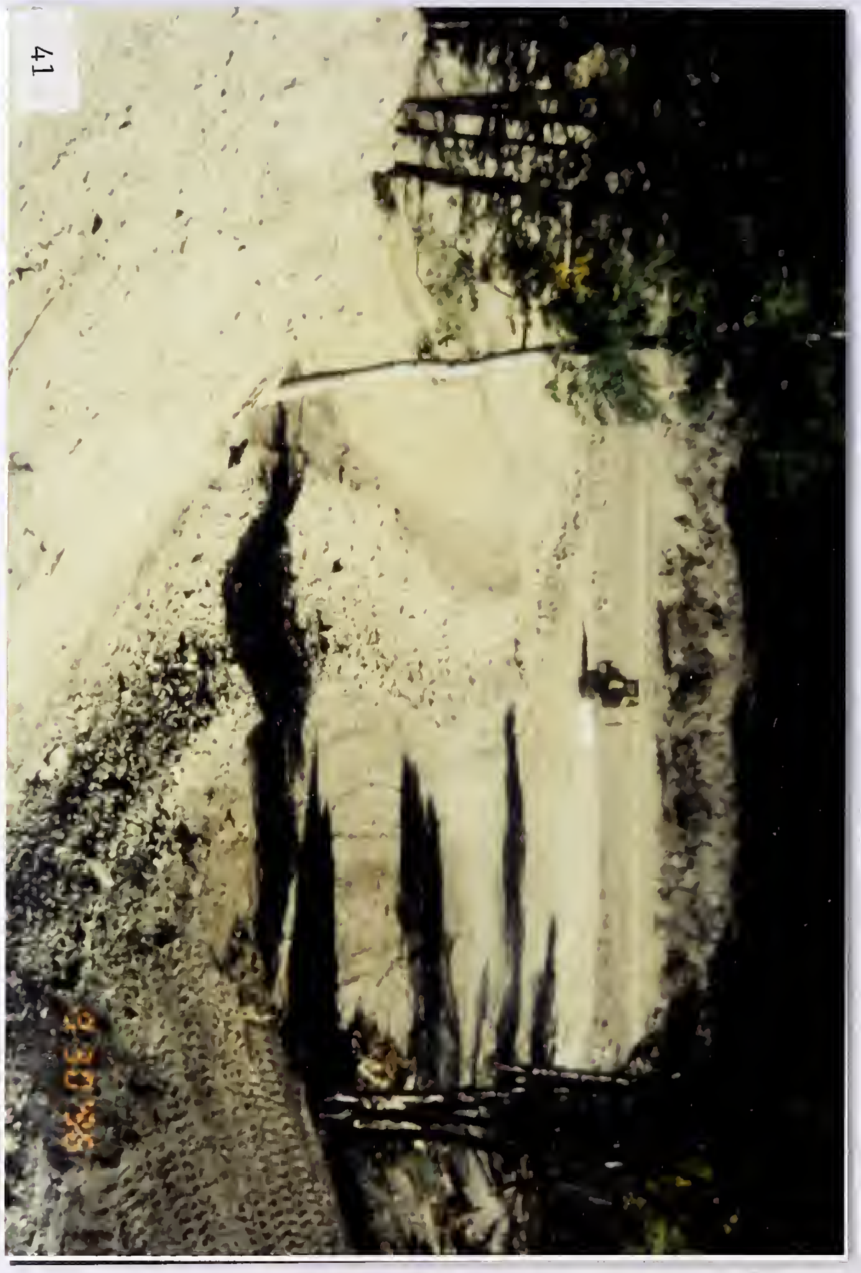
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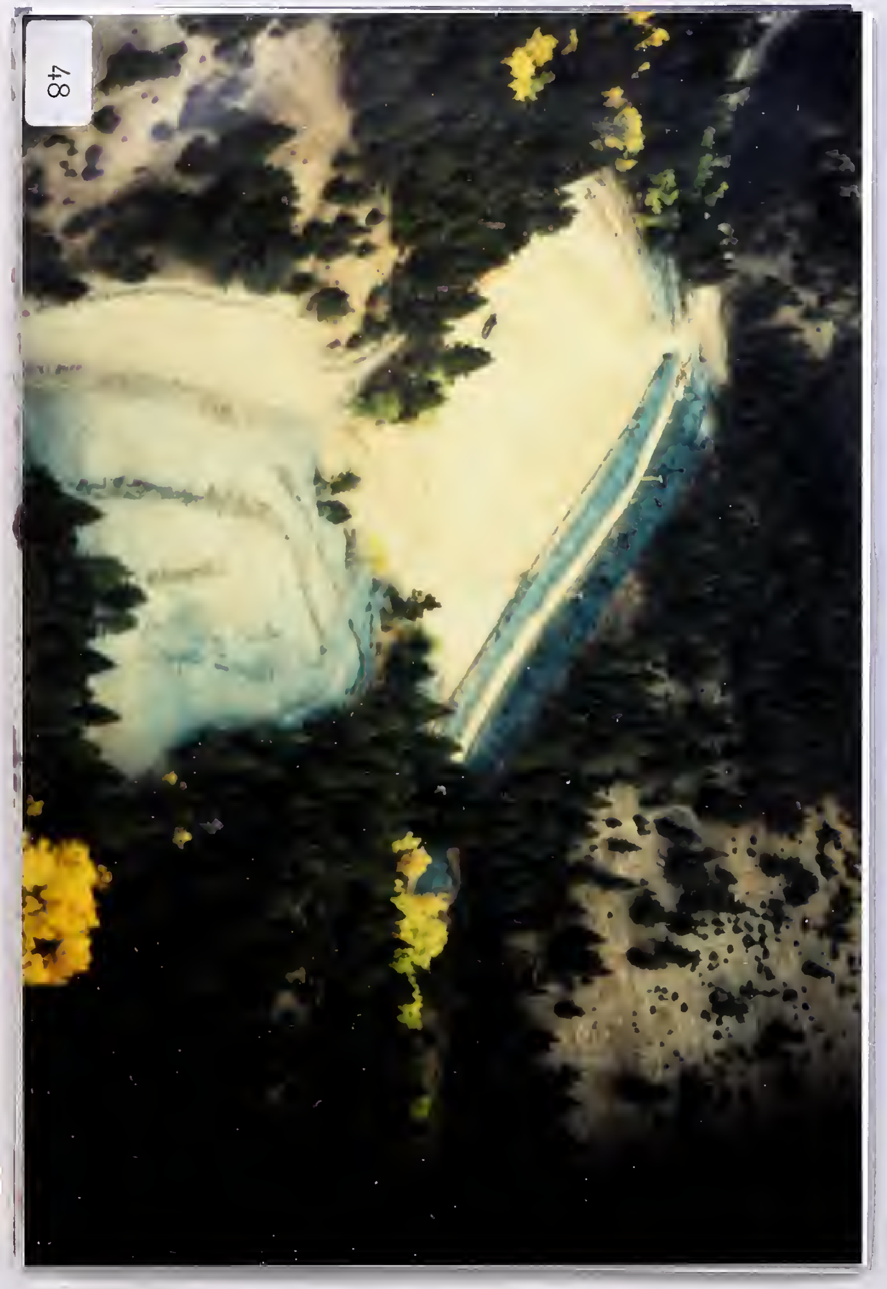
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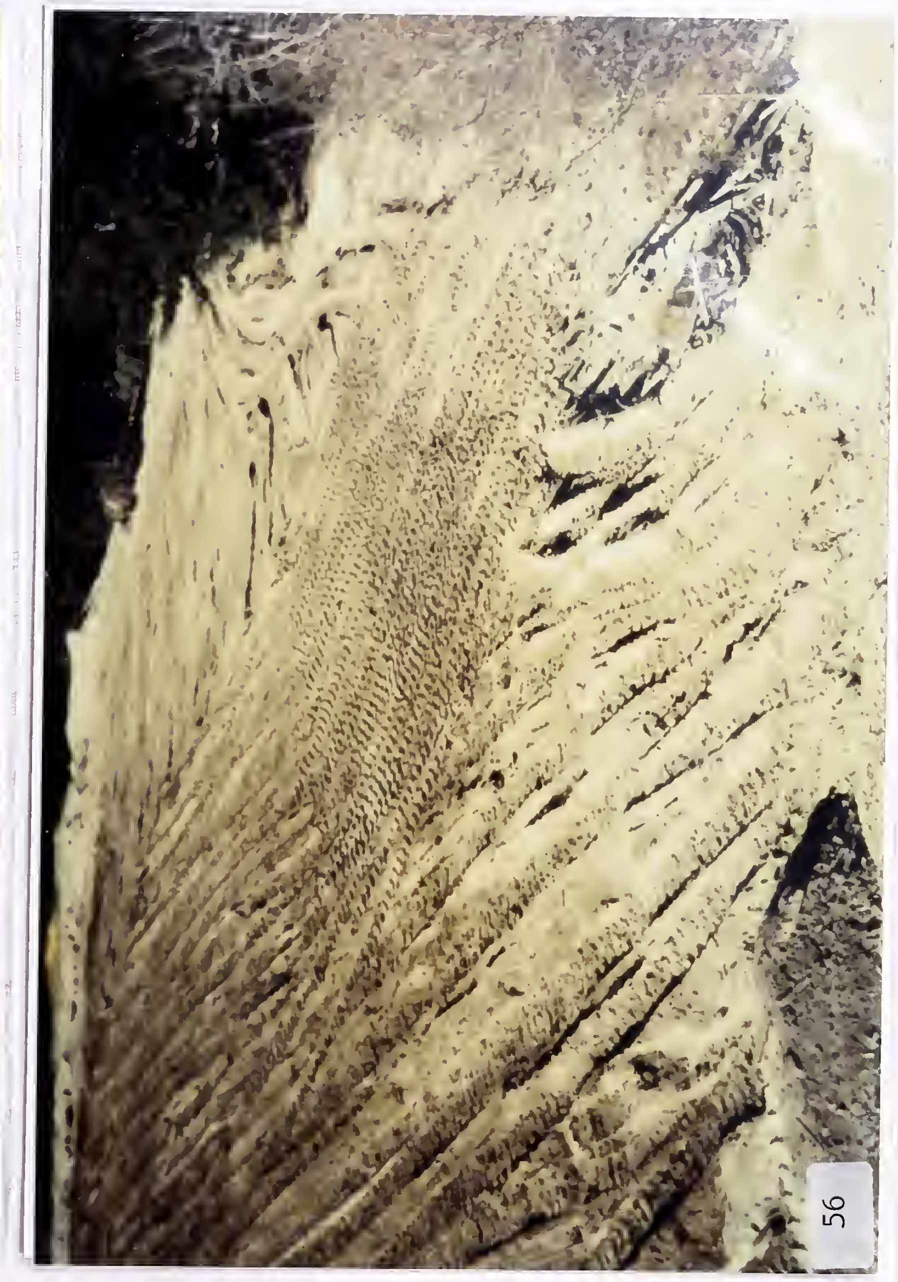
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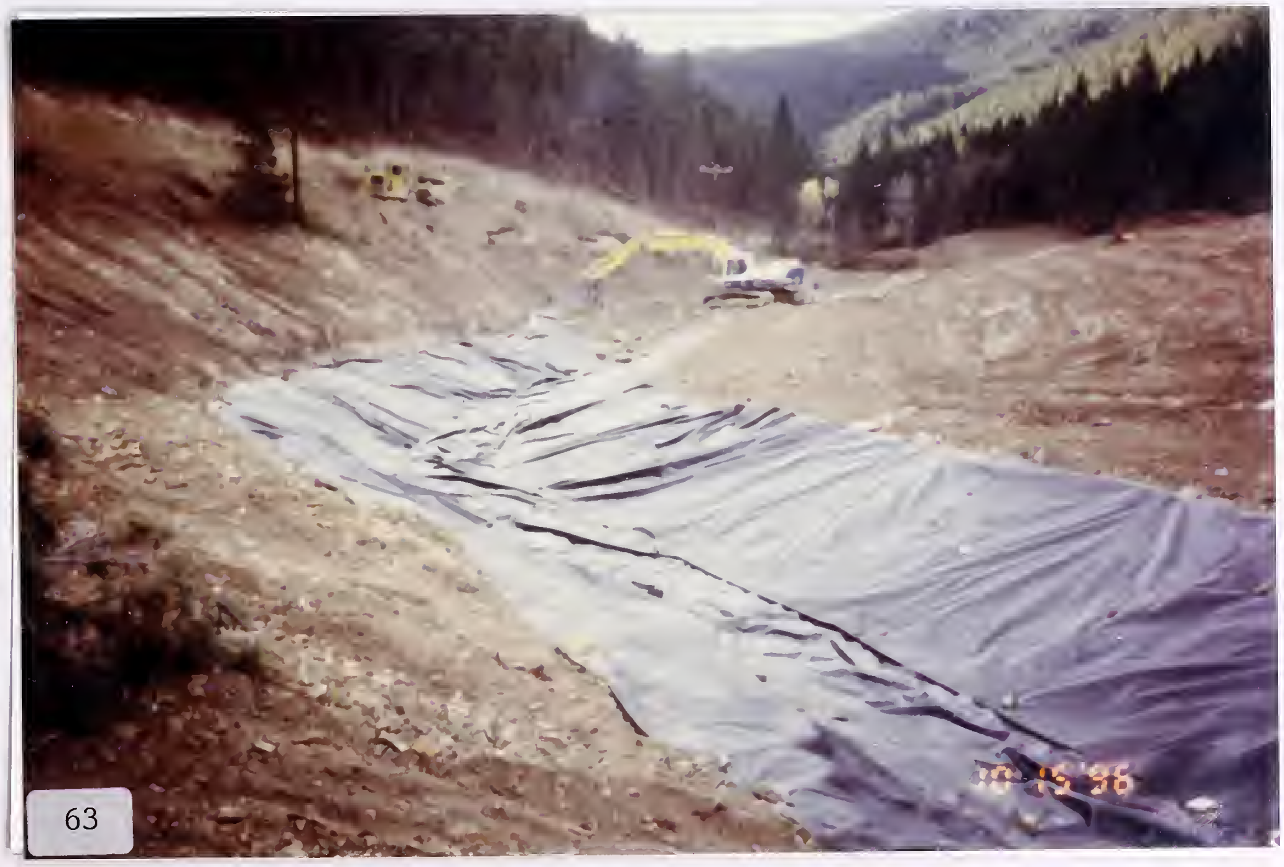

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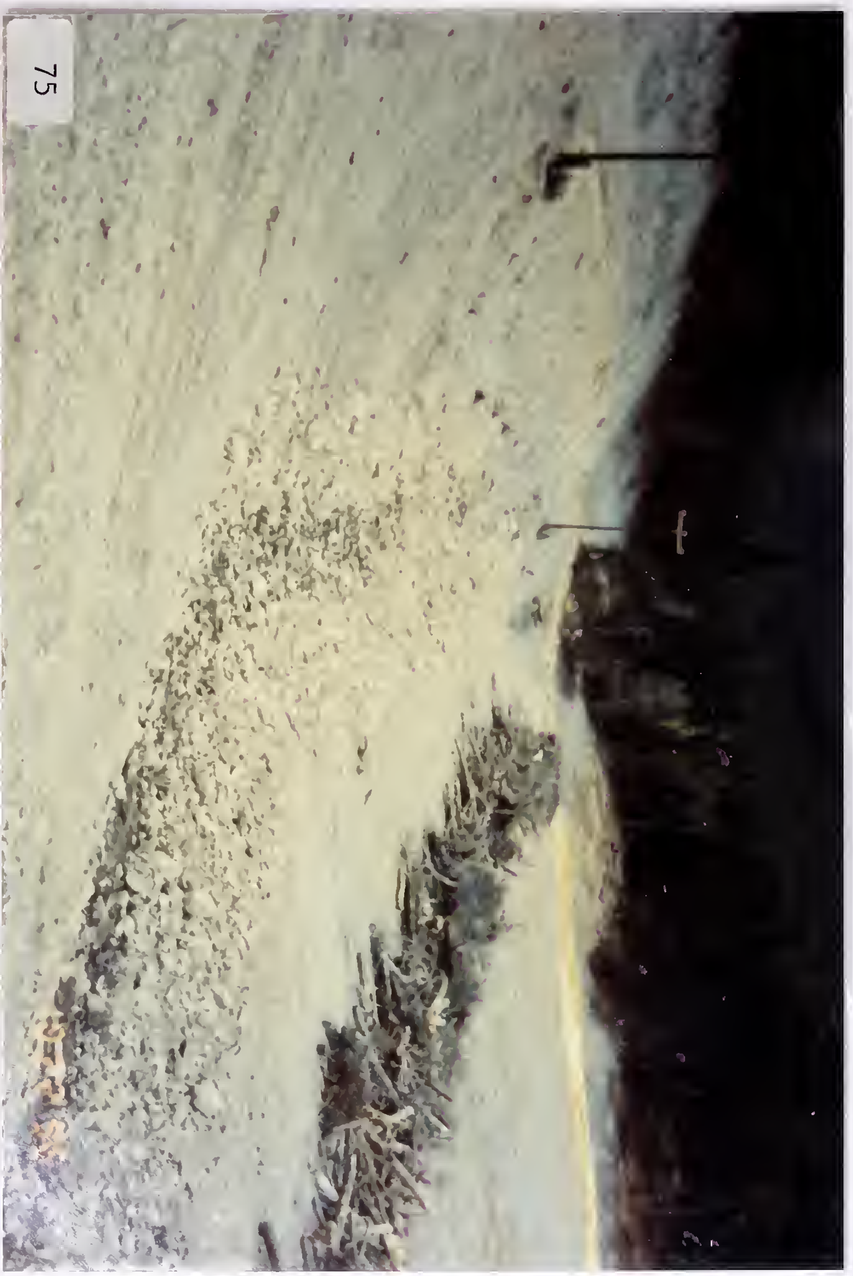

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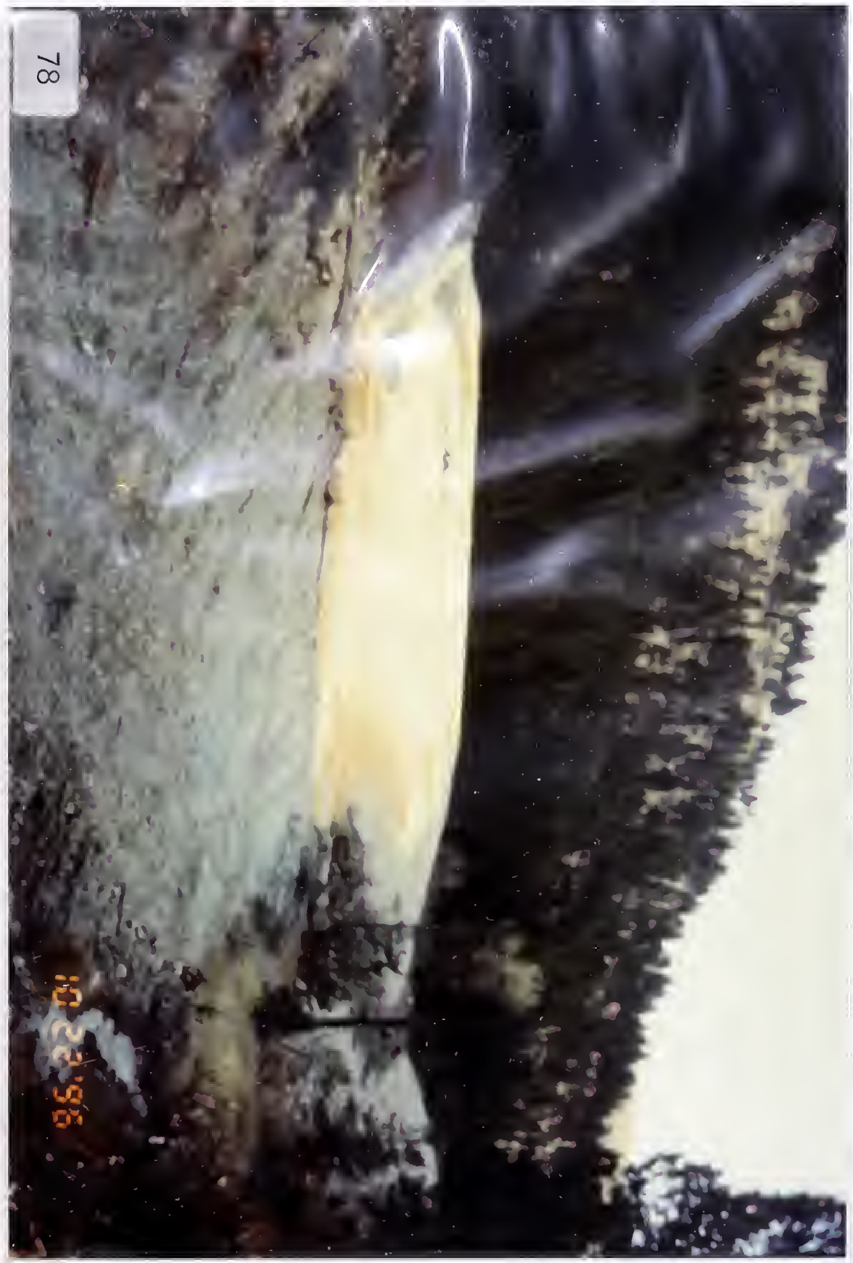

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